# 'It's Important to Know In Time'

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The Newspaper of the Industry

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# 'Written To Be Read on Arrival'

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# **Concentration of Industry Is New** Plan of WPB

Nelson Voices Approval Of Idea of Production By Small Plants Only

WASHINGTON, D. C .- In announcing, on July 26, the arrival of two of his experts in Britain for an intensive two-week study of industrial concentration, Donald Nelson, WPB chief, gave further emphasis to the announced plan of applying the principle of "concentration of industry" in this country.

Britain, he pointed out, adopted the principle of concentration of industry early in 1941 and, at that "had reached a stage which the United States has now reached."

On July 23 Mr. Nelson had announced that the WPB would apply the same principle in this country, choosing a few small plants to carry on the essential civilian production of entire industries, and forcing the remainder of the industries to close down or convert to War work.

The two experts that Mr. Nelson sent to Britain are well-known to refrigeration industry. They are Dr. Arthur R. Burns, Chief of the Civilian Planning Branch of the Office of Civilian Supply, who was much in evidence in refrigeration

# Now In England



HENRY DINEGAR One of two WPB officials nov in England studying industrial concentration program.

problems in the OPM and OPACS days; and Henry A. Dinegar, now Chief of Concentration for the Office of Civilian Supply. Mr Dinegar was about the first Washington official with whom the refrigeration industry had much contact, that being back in the OPACS days of 1941. Later he became Chairman of the Refrigeration Section of OPM and Chairman of the Refrigeration Industrial Advisory Committee. Later, he was advanced to the position of Chief, Consumers Durable Goods Section, Division of Civilian Supply, which still had some sections of the industry under its wing.

Mr. Nelson said that the WPB has approved the principle of concentratior of industry as a means of alleviating the strain placed on the civilian economy by the war effort. In approving this principle, the Board also approved certain broad policies governing the way in which concentration will be made effective. Heretofore, Mr. Nelson pointed out, the necessary limitation of outof civilian industries has been attained for the most part through orders which impose uniform perentage reductions on all firms. (Concluded on Page 13, Column 1)

# Frozen Foods Industry Plans Drive For Greater Civilian Consumption One Purpose Is To Get More Dispensing Cabinets

CHICAGO — Twenty-five thousand retailers of frosted foods from Maine to California will participate in a consumer education campaign commencing with National Frosted Foods Week Oct. 19-24, to implement the government's suggestion that the civilian consumption of quick-frozen perishables be increased to alleviate shortages of canned foods allocated to the nation's military and lendlease needs.

Details of the campaign in which 1,200 producers, brokers, and wholesalers will join have been detailed by F. Winter, president of Frosted Food Retailers of America, under whose auspices the merchandising program will be conducted to carry out the requests made to the distributing group by the War Production Board and the Department of Agriculture. Explaining that the drive was originally scheduled to start in September, Mr. Winter said that the later date was selected at the suggestion of War Production Board officials.

In his announcement of the forthcoming drive to increase the salesproductivity of retailers' low temperature equipment, Mr. Winter said that the government's attitude toward the future essentiality of manufacturing such equipment will be determined largely by the results obtained from the campaign. He added that while both the WPB and the Department of Agriculture are anxious to cooperate in helping the

**WPB Making Final** 

Check on Need For

**Inventory Control** 

WASHINGTON, D. C. - Three

regional meetings at which whole-

salers and retailers in the Middle

Atlantic and New England states,

and in the West, will have the op-

portunity to present their views on

the current inventory situation, and

on the question of governmental in-

ventory regulation, were announced recently by Eaton V. W. Read, chair-

man of the Wholesale and Retail

Inventory Policy Committee of the

War Production Board's Office of

Plans called for informal confer

ences of merchants and committee

members in New York City on July

22, 23, and 24, in Chicago on July 27

and 28 and in Pittsburgh on July 29.

Dr. Read, who is on leave from his

post as professor of marketing at

De Paul university, Chicago, said

"the committee has not yet made a

recommendation to WPB as to

whether or not it considers inventory

control to be necessary. The tech-

nical staff under the supervision of

Dr. D. J. Duncan is still at work on

its collection and analysis of sta-

tistical data. The conferences held

in Washington last week with whole-

salers and retailers in varying lines

(Concluded on Page 4, Column 4)

YORK, Pa. - John Carr, former

president of the York-Shipley Co. of

Shanghai, China, has recently been

appointed export sales manager of

The executive offices here will be

Mr. Carr's headquarters. Mr. Carr,

who has been associated with York

since 1925, replaces James C.

Tweedell, recently named general

sales manager for the company.

Carr Directs Export

York Ice Machinery Corp.

Sales For York

Announcing the coming meetings

Civilian Supply.

industry expand retail distribution, it is the responsibility of the industry to demonstrate that present retail installations are being put to maximum use.

Citing the fact that distribution to new outlets, while not entirely prohibited, has been slowed down by WPB order L-38 which places new equipment under priority regulation, the head of the retailing organization referred to the following message received from the office of Claude Wickard, secretary of Agriculture, as bearing on the future likelihood of any large scale increase in distribution.

"The Department Of Agriculture is interested in the part which the frozen foods industry must play in the maintenance of civilian food supplies. The information which we now have indicates that there is considerable possibility of increasing the use of present facilities for retailing frosted foods. This appears to be one of the major tasks confronting the frozen food industry, and the manner in which this challenge is met will undoubtedly have an important bearing on the long run avaliability of materials for frozen food equipment."

In its message to the retailers the WPB stated that the important part that fresh frozen fruits, vegetables, fish, meats, and poultry can play in the nation's war and post-war economy should be brought to the Concluded on Page 16, Column 3)

# Congressmen Support Pleas To Allow More Gasoline To Salesmen

WASHINGTON, D. C. — Several Congressmen expressed support of pleas to triple the amount of gasoline now given to traveling salesmen in the gas-rationing areas, at a meeting held here last week.

Denial of additional gasoline to traveling salesmen would imperil vital businesses, OPA officials in charge of rationing were told.

Limited now to enough gasoline to permit 470 miles of travel in a month, the salesmen seek easing of the restrictions to allow them at least 1,500 miles a month of business

The meeting was assembled upon the call of Georgia's Rep. Pace.

Several Congressmen who addressed the group denounced the OPA's provision that political candidates might get unlimited quantities of gasoline, and said that they would give up theirs if it could be made available to the traveling salesmen or other vital war workers.

During the meeting, salesmen and other spokesmen for business from Vermont to Florida, detailed the effect of limiting salesmen in their travel, especially in rural areas. The salesmen were called not only a valuable part of the business machine, but also "purveyors of sunshine and goodwill, and invaluable morale builders.'

# **Universal Cooler Nets** \$113,302 For Quarter

MARION, Ohio-Universal Cooler Corp. for the June quarter reports a profit before provision for Federal income and excess profits of \$113,302, contrasted with a loss of \$31,493 in the similar quarter of 1941.

For the nine months to June 30 the profit before Federal taxes is \$141,024, compared with a loss of \$205,576 in the nine months ended with June, 1941.

# Replacement Parts Exempt from **Inventory Order L-63 Provisions**



J. M. FERNALD

# Fernald, Branch Chief In WPB, Is Dead

WASHINGTON, D. C .- John M. Fernald, Chief of the Air Conditioning and Commercial Refrigeration Branch of the War Production Board, died July 27 at the Veterans Hospital at Mount Alto, Md. He was 52 years old.

Funeral services were held July 29 at the Wm. R. Miller Funeral Home in Waltham, Mass.

No successor to his post as Chief of the Branch has yet been named. Harry C. Williams, assistant chief, was made acting chief of the Branch a short time ago when Mr. Fernald was granted a leave of absence because of the illness which eventually proved fatal.

A veteran of more than 15 years executive work in the refrigeration business, Mr. Fernald left the position of general manager of the Baker Ice Machine Co. to join the WPB last November. He was with the Contract Distribution Division, as chief of its contract and placement service, until the organization in March, under his direction, of the Air Conditioning and Commercial Refrigeration Branch.

Always active in industry cooperative activity, Mr. Fernald was president from 1936 to 1938 of the Refrigerating Machinery Association. In 1936 he was president of the Omaha Manufacturers Association. He has also been chairman of the Nema Industrial Research Committee; member of the board of the (Concluded on Page 13, Column 5)

# Credit Bans Off For Heating Conversion

WASHINGTON, D. C .- To facilitate the conversion of oil-burning heating equipment on the East Coast to coal because of the expected oil shortage this coming winter, the Federal Reserve Board on July 27 liberalized credit restrictions.

The board will no longer require down payments or repayments within a limited term of months in connection with the conversion of heaters. installation of weatherstripping, or insulation or other devices to conserve fuel. Dealers and contractors will be at liberty to establish whatever requirements they choose.

Under previous Federal Reserve regulations, if conversion were financed on the instalment plan it would have to be paid for one-third down and the balance in 12 months.

# Teader Passes Record Keeping Is No Longer Necessary on Host of Small Parts

WASHINGTON, D. C. - Replacement parts are no longer subject to the provisions of the Suppliers' Inventory Limitation Order L-63, under Exemption 6 to this order which became effective last week.

By the terms of Exemption 6 dealers, distributors, and parts jobbers no longer need to include in the monthly record and report required by L-63 the functional replacement parts for machinery and equipment that they have; and they are not bound by the restrictive permissible inventory provisions of the original

Exemption 6 also excepts machinery or equipment purchased by the supplier at a cost per unit in excess of \$500, and also any material which is subject to rationing by the Office of Price Administration.

The provisions of Order L-63 were particularly irksome to those in the industry who maintain the wide variety of parts and supplies necessary for the maintenance and repair of existing refrigeration equipment, since L-63 made it mandatory to keep separate records for each type of supplies handled.

Under the original order wholesalers and dealers affected by the order who were located in Eastern and Central time zones were required to limit their inventories to twice the dollar value of sales of the specified types of supplies which they shipped from stock in the second preceding calendar month.

(Concluded on Page 4, Column 1)

# **Limit Motor Sales** To Essential Users

WASHINGTON, D. C .- New electric motors will be available in the future only for the most important War and civilian requirements, and other applicants must get along with used equipment, the War Production Board ruled July 24.

In general, large motors of any kind (used or new) are not available for other than War or essential civilian uses, but there are believed to be 1 million or more above 1 hp. available in the country.

At the same time the WPB undertook to conserve materials, production capacity, and manpower in the electrical goods manufacturing industry, by requesting producers to undertake a voluntary simplification program covering types and designs of motors. "Overloading" of present equipment beyond its rated capacity will be an integral part of this program, it was added.

The government is making a check of used motors available for industrial purposes and with the aid of non-government bodies is compiling a list of 1,000 motors a day, according to type, horsepower, etc.

# Lynch Corp. Shows Profit of \$175,033 for Six Months

DEFIANCE, Ohio - The Lynch Corp., parent company of the Lynch Mfg. Corp. which was formerly the Modern Equipment Corp., manufacturer of "Par" compressors, and its wholly owned subsidiary have attained a net profit of \$175,033 from Dec. 30, 1941 to June 30, 1942.

This provides a dividend of \$1.17 on each of the 150,000 shares of stock as compared to \$1.88 a share from last year's profit of \$281,712.

# **Nelson Names Directing Personnel, Outlines** Purposes of Smaller War Plants Corp.

# Wm. S. Shipley of York Is One of Agency's 5 Directors

WASHINGTON, D. C. - The appointment of a board of directors for the Smaller War Plants Corporation was announced by Donald M. Nelson, chairman of the War Production Board, following passage by Congress of legislation providing for the establishment of the Corporation.

Members of the Board are as

Lou E. Holland of Kansas City, Mo., who will also serve as Deputy Chairman on Smaller War Plants, War Production Board, in line with the Congressional provision for appointment of such an official to make surveys and studies of the war production facilities of smaller plants.

William S. Shipley of York, Pa., chairman of the board of the York Ice Machinery Corp., and past president of the American Society of Refrigerating Engineers and the York Manufacturers' Association. He was a moving spirit in the "York Plan," one of the pioneer war work pools in the United States.

James T. Howington of Louisville, Ky., district manager of the WPB office in Louisville since

September, 1941. Albert M. Carter of Murphysboro, Ill., director and past president of the First National Bank of Murphysboro.

Samuel Abbot Smith, of Boston, president of the Thomas Strahan Co. of Chelsea, Mass. This concern, with which he has spent his entire business career, manufactures wall paper. In announcing these appointments, Mr. Nelson stated in part:

"I believe that the greatest usefulness of this corporation will be found in its operation along these lines:

"1. By effective and persistent work to confine the manufacture of relatively simple war items to the smaller factories, using the facilities of large plants exclusively to make those complicated and difficult items which cannot be made by the small

"2. By a very great extension of sub-contracting, both through the use of pools and through much greater emphasis on the farming-out of manufacture of bits and pieces by large corporations which hold prime contracts.

"3. By the conversion of small essential civilian production. In our war program we cannot make a sharp distinction between military and civilian production; the distinction rather is between goods which must be produced in a total war economy, and goods which such an economy can get along without. I am convinced that a substantial number of small plants whose present production is not essential to our war economy can be extremely useful in the production of other kinds of

"The Smaller War Plants Corporation has a capitalization of \$150,000,-

000. It has the power to accept prime contracts from war procurement agencies. It can take these prime contracts and split them up, subcontracting with small business firms for the production of component parts.

"It will be able to deal effectively with pools, not only because it can help provide the pools with engineering and financial assistance, can help manufacturers to rehabilitate old machinery, and in certain cases may be able to help manufacturers acquire vitally needed new machinery.

"We must not, of course, expect this corporation or the legislation under which it will operate to be a panacea which will solve all of the problems of small businessmen. It is unfortunately very likely that the number of small business firms which we can help in this war will be smaller than the number we cannot

# Big Stepup Needed In Conversion of Idle Copper Stocks

WASHINGTON, D. C .- One million pounds of copper and copper alloy products in idle, excess and frozen inventories were directed into strategic war production during the first 15 days of the Government copper recovery program, it has been revealed by Ernest A. Tupper, Chief of the Inventory and Requisitioning Branch of the War Production

Mr. Tupper stated that as the result of voluntary sales alone, with WPB acting only as a clearing house, over 2,000,000 pounds of idle and excess inventories of copper will be flowing weekly, directly and indirectly, into the production of munitions, tanks, planes and ships.'

#### NEED 5-FOLD INCREASE

Mr. Tupper warned, however, that "although a good start has been made," and industry generally is cooperating wholeheartedly, "the acquisition of idle and excess inventories of copper and copper alloys will have to be stepped up five-fold, both by voluntary sales and Government purchase and resale, in order to keep war production assembly lines operating at full capacity."

Mr. Tupper added:

"Government and industry must cooperate in this big job of channeling rapidly into war production every pound of the half-billion pounds of copper and brass now in the idle and excess inventories of American industry. The scope and magnitude of the task is obvious when one realizes that these inventories are in the possession of some 100,000 holders, many of whom have thousands of different items in their

# COPPER RECOVERY CORP.

WPB and the Copper Recovery Corp., which acts as agent of Metals Reserve Company, an RFC corporation, originally expected to pick up over a half-billion pounds of copper and brass. However, as a result of the issuance of Priorities Regulation No. 13, which permits the movement of frozen inventories under certain circumstances and to specified buyers, it is now believed that as much as 150,000,000 pounds of copper will find its way into war production without further Government assistance.

"Time is the essence of this program," Mr. Tupper stated. "Every businessman with idle inventories of copper or brass should have a full realization of the part he must play, and a complete understanding of how the program functions."

Mr. Tupper pointed out that of the approximately 100,000 inventory questionnaires sent to all types of firms which would ordinarily use or process copper and copper-base alloys, 30% have so far been filled out and returned to the War Production Board.

# FORMS MUST BE FILED

"It is of the utmost importance," he said, "that the firms still holding these forms fill them out accurately and completely and file them at

Explaining the procedures followed by WPB and the Copper Recovery Corp., Mr. Tupper said:

"Simply stated, the copper recovery program divides itself into three phases.

# Amended Steel Order Prohibits More Items. **But Eases Restriction on Air Conditioning**

# Industrial Plant, Hospital & Repair Work Is Excepted

WASHINGTON, D. C .- The amended Iron and Steel Conservation Order M-126, which went into effect as amended July 13, adds many new items to the list of civilian articles the manufacture of which is prohibited, and makes some changes which are significant to the commercial and industrial refrigeration and air conditioning field.

The amended order says that from and after Aug. 3 no person shall assemble any item on List A or part thereof containing any iron or steel. Those on list had previously been prohibited from putting into process, later than June 19, any iron or steel. List A restrictions do not apply to Army-Navy-Maritime contracts until Aug. 4.

#### AIR CONDITIONING SYSTEMS

Significant to the industry is the fact that while "air conditioning systems" are included in list "A" the provision has been added "except for hospital operating rooms and industrial plants." It is also provided that in the case of air conditioning systems that "maintenance and repair be excepted."

On supplementary list "A" the long list of added items include only two of interest to the industry-'ice cream cabinets of stainless steel" and "refrigerators and refrigeration equipment of stainless steel, except essential machinery parts." Supplementary List A restrictions do not apply to Army-Navy-Maritime contracts until 60 days from

#### NEW LIST "C"

A new list, list "C," is added for Army, Navy, and Maritime Commission orders. Articles on List C for these governmental agencies may be manufactured without restrictions. Included in list "C" are the following:

"Air conditioning systems - for ships, hospitals, and tropic use only.

"First: The holders of idle or excess inventories of copper and copper-base alloys report these inventories in detail to WPB. At the same time they indicate whether or not they are willing to accept Government prices for their materials.

"Second: WPB then makes every effort to arrange a negotiated sale of material usable in its present form by a war contractor. There are advantages both to industry and Government when a sale can be made on this basis. The owner gets a better price if the material can be used in its existing form. From the Government's standpoint, a negotiated sale direct to a war producer saves essential time. In this type of transaction, WPB acts only as a clearing

"Third: If materials do not lend themselves to direct use in war production in their existing form, they may be purchased by the Government and allocated to scrap users. In such cases the Copper Recovery Corp. acts as fiscal agent, and pays Government schedule prices to the

# REQUISITIONING POWER

"In the event that a holder refuses to sell his material for war purposes it will probably be necessary for the Government to requisition and take over his inventory in order to maintain war production sched-

"Any holder of copper or copperbase alloy who is not engaged in war production, and has not received a WPB inventory form should immediately apply to the nearest WPB field office for copies of forms 843 A, B, and C, and file them at once with the Copper Recovery Corp., 200 Madison Ave., New York, N. Y.

"Likewise, war contractors encountering shortages of copper which cannot be filled at the time needed through normal sources of supply also should get in touch with the nearest WPB office, as WPB and the Copper Recovery Corp. maintain a perpetual inventory of all available idle and excess copper and copper-base products. The materials included in WPB's master inventory are available to all war producers with preference ratings of A-1-k or

stoves - commercial "Cooking electric.

"Electric water coolers-for hospital and tropics use only."

# 'Quota System' Will Funnel Out Steel Supply To All Producers

WASHINGTON, D. C .- A quota system for the various steel products and for each producer who makes them, to balance steel production among various products needed for War, was announced recently by Reese H. Taylor, chief of the iron and steel branch of the War Production Board.

The move will channel steel output directly into vital products, it was said. Recent emphasis on semifinished steel for shipment abroad, plates, shapes, alloys, rails, and rail accessories, and tinplate has resulted in diversion of steel from bars, sheet, pipe, wire, and similar products. The establishment of quotas for each product and for each producer will make the maximum necessary output of each product possible.

Mr. Taylor recalled that it had been recent policy to obtain the greatest possible tonnage of steel plates without regard to the effect of this diversion of steel on other products. He said that the new policy would not necessarily mean a decline in plate production.

That would depend on the relative need for other products and upon the over-all supply of steel ingots. Companies producing only plates would be expected to continue to produce the highest tonnage possible, while those with a diversified line would be expected to fill their quotas of other products before they turned out any over-quota plates.

# Masonite Liner Used In New Icebox Model

CHICAGO-An ice refrigerator using pressed wood in place of metals has just been introduced to the retail trade by the Ward Refrigerator Manufacturing Co., Los

Production has begun on the unit known as Olympic V-600 which has been constructed in such a manner as to closely resemble the more popular types of mechanical refrigerators and it is said that some of the first boxes have been turned over to the armed forces.

At the showrooms of the Chicago District Ice Association, where the model is on view, it is stated that the box uses masonite for both interior and exterior. A single door opens the entire interior with pound ice compartment in the upper portion. An easy pull-up at the bottom makes the drip pan available. The new box will retail around \$75.

# **Defense Housing Buys** 50,000 Iceboxes

WASHINGTON, D. C .- The letting of five contracts for the production of 50,000 ice refrigerators (delivery called for within four months) to be used in Defense Housing projects in the States has been announced by representatives of Defense Housing.

The refrigerators will be built according to specifications submitted by Defense Housing. They will contain not more than 20 pounds of metal each, the same restriction as applies to production of household refrigerators for civilian use, and will be of 75-lb. total ice chamber ca-

Delivery will be made to the Defense Housing Authority and installation arranged by them. In some instances, at least, drip pans are to

Each of the successful bidders is a well known manufacturer of ice refrigerators, it was announced. Three plants are located near the Great Lakes, one on the Pacific coast, and one on the Atlantic coast.



IS OURS...

Meeding the best-fed-army-in-the-world is a gigantic task. Perishable foods are being kept free from bacterial infections (the ever present "hidden enemy") under all adverse world climates.

More than nine-tenths of our present production is designed to protect food and to produce other critical "things" for the armed forces.

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But still there are thousands of other homemakers anxious to know how to make their electric appliances last the duration. In fact, demand for this helpful 36-page home manual continues to be so great that we're starting to distribute our 2nd million copies!

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# **Priorities Information**

# **Exemption 6 Puts** Replacement Parts Out of Order L-63

(Concluded from Page 1, Column 5) Suppliers located in other time zones may have inventories equal to three times the corresponding amount.

(Text of Order L-63 as originally written was published in the April 13 issue of AIR CONDITIONING & REFRIGERATION NEWS.)

Following is the text of Exemp-

"Exemption 6 to Suppliers' Inventory Limitation Order L-63.

"(a) Pursuant to paragraph (b) (6) of Suppliers' Inventory Limitation Order No. L-63 as amended, the Director General for Operations hereby exempts from the provisions of said order, the types of material set forth in paragraph (b) of this exemption.

"Accordingly, it is not necessary for Suppliers to include in the monthly record and report required by paragraph (e) of said Order L-63, those Materials set forth in paragraph (b) hereof.

"Also, the inventory limitations imposed by paragraphs (b) (1) and (b) (2) of said Order L-63, are not applicable to said materials but are applicable to other materials falling within the definitions of supplies in

"(b) This exemption is applicable

to:
"(1) Functional replacement parts for machinery and equipment: Provided, That in no event shall the distributor accept delivery of any such parts where his inventory thereof is, or will by virtue of such delivery become in excess of six times his sales during the second preceding calendar month.

"(2) Machinery or equipment which is purchased by the supplier at a cost per unit in excess of \$500. "(3) Any material which is sub-

ject to rationing by the Office of Price Administration.

"Isued this 22nd day of July, 1942. Amory Houghton, Director General for Operations."

# 'M' Order on Zinc Will Permit Some Use In Refrigeration

WASHINGTON, D. C .- Conservation Order M-11-b-Zinc, bans the use of this material in the manufacof mechanical refrigerators after Sept. 1 "except for essential food storage, food transportation and industrial uses and except items for repair and maintenance."

Such exceptions were unusual in the long list of "banned" items on the "A" list accompanying the order. Other items of interest on this list included:

Electric stoves and ranges. Gas-fired stoves and ranges (except items for repair or maintenance). Electric motors, except for motor

rotors. Ice cream cabinets.

Washing machines (except items for repair and maintenance).

Main provisions of the M-11-b order are:

(1) Between July 24 and Sept. 1 no person shall put into process in the manufacture of any item on List A more weight of zinc than 50% of the average monthly weight of zinc put into process by him during 1941 in the making of such item, and no person shall put into process any zinc in the making of such item unless processing thereof will be completed within such period.

(2) Effective Sept. 1, 1942, no person shall process any zinc to make any item on List A.

# Patriarca Co. Formed In Providence, R. I.

PROVIDENCE, R. I.—Patriarca Store Fixtures, Inc., new soda fountain equipment manufacturer and distributor at 213-221 Admiral st. here, has just been formed from the merging of Patriarca Store Fixtures Co., manufacturer, and J. J. Pastille, Inc., distributor, it was announced this week.

Specializing in designing and manufacturing fixtures for drug and ice cream stores, restaurants, and luncheonettes, the new company also will distribute Bastian-Blessing soda fountain equipment.

# August 10 Is Deadline For Manufacturers to File for Priority Aid

WASHINGTON, D. C. - Applications for priority assistance on materials manufacturers will need for the last quarter of 1942 must be filled out before Aug. 10, the War Production Board stated.

Production Requirements Plan necessitates the applications to be made on priorities form PD-25-A for allocating critical materials which became effective with the third quarter of the year starting July 1.

Form PD-25-A, under PRP, serves a dual purpose. It provides a basis on which War production requirements committee in Washington will determine total requirements for critical metals for the fourth quarter and make allocations to industries. Also, the applications from manufacturers on PD-25-A ask WPB for preference rating assistance in purchasing authorized quantities of

# Information Sheet to Speed Issuance of PRP for 4th Quarter

WASHINGTON, D. C .- In order to facilitate authorization of critical raw materials to companies operating under the Production Requirements Plan during the fourth quarter, a Supplementary Material Information sheet, use of which is optional, has been added to the revised Form PD-25A.

In issuing the sheet the Office of Operations pointed out that in the past authorization of critical materials to a PRP unit often has been delayed in order to make sure that such authorization would not contravene any conservation or limitation order.

The new sheet eliminates this delay by providing a standardized form in which the manufacturer may give additional information on certain critical materials.

# Ambler Heads District for Pittsburgh Lectrodryer

PITTSBURGH-J. B. Ambler, formerly with the mining industry in this section, has recently been appointed District Representative in the Middlewest it was announced by the Pittsburg Lectrodryer Corp., 32nd St. & A.V.R.R.

Mr. Ambler will have his offices at 602 Denver National Building,

# WPB Hints Meetings With Businessmen **Reveal Opposition To Inventory Control**

(Concluded from Page 1, Column 2) were helpful in giving us the ideas of firms in South Atlantic states, and we hope that there will be even larger representation at our coming conferences."

Individual conferences with members of the Wholesale and Retail Inventory Policy Committee should be arranged in advance by merchants who wish to participate in the discussions.

This may be done by communicating with the WPB office in the nearest city in which conferences are scheduled.

Meetings will be held in the following WPB field offices:

New York: Room 816 Chanin Building, 122 E. 42nd Street. For appointment: Call Murray Hill 3-2520 or write Sidney Hogerton, Deputy Regional Director, at above address.

Chicago: 26th Floor, Civic Opera Building, 20 N. Wacker Drive. For appointment: Call Andover 3600 or write J. L. Overlock, Regional Director at the above address.

Pittsburgh: 8th Floor, First National Bank Building. For appointment: Call Grant 5370 or write F. R. Denton, Deputy Regional Director, at above address.

Dr. Read and the other committee members, Irwin D. Wolf, vice president of Kaufman's department store, Pittsburgh, Pa., and John A. Donaldson, vice president and treasurer of Butler Brothers, Chicago, will be available for consultation at all of the meetings.

In Chicago, the committee will be assisted by Dr. D. J. Duncan, professor of marketing at Northwestern university and chief consultant to Dr. Read.

Businessmen who are unable to attend the meetings are urged by Dr. Read to submit to him by letter their views on the necessity of inventory regulation, and the factors which

should be taken into consideration.

'Conflict' With Proposed Plan Is Reported

NEW YORK CITY-"Much valuable information from a very cooperative cross-section of retailers and wholesalers" was produced at initial conferences between New York business men and WPB officials on the problem of inventories held recently in the Chanin building, according to Eaton V. W. Read, chairman of the Wholesale and Retail Inventory Policy Committee of the WPB Office of Civilian Supply.

He disclosed that the viewpoints expressed were often in conflict on the necessity for any inventor; control plan.

The interviews were conducted in personal conferences with chain and individual organizations dealing in stationery, clothing, hardware and electrical equipment; also with spokesmen for department stores, trade associations, and merchandising groups from New York and New Jersey. A number of other business representatives arrived from New England.

Mr. Read emphasized that the committee was not concerned with the individual store's inventory but with the inventory distribution according to geographic area, size, and type of store, defense needs, and other factors. He said that the purpose of the interviews were purely fact finding and that there were no specific questions asked on a particular firm's inventories. Mr. Read was backed in this by Irwin D. Wolf, vice president of Kaufman Department Stores, Inc., Pittsburgh and John A. Donaldson, vice president of Butler Brothers, Chicago.

Typical questions were: "Do you, or do you not, feel government control of inventory necessary?" "Reasons for your opinion?" "What factors peculiar to your trade should be considered in handling the inventory problem?"

The material secured through the interviews and through statistical study now being made by the technical staff of the committee will form the basis of the recommendations for inventory control which will be made to the directing heads of the WPB, Mr. Read said.

Those interviewed expressed their willingness to place the country's war needs above their own interests, he added.

# **Utility Executive Joins WPB Staff in Atlanta**

ATLANTA - Continuing the War Production Board's policy of decentralization, O. M. Jackson, sales promotion manager of the Georgia Power Co., was appointed WPB deputy regional director here, it was announced by Frank H. Neely, WPB regional director.

From his newly opened office here Mr. Jackson will direct war industry production and expedite the conversion of factories to war work in his region, covering the Carolinas, Tennessee, Alabama, Georgia, Mississippi, and Florida.



The hidden enemies that lurk in all perishable foods bacteria which cause decay and spoilage - can be successfully combatted by only one weapon: efficient refrigeration.

That's why the All-Industry Program to conserve existing refrigeration equipment is so vital to our nation's welfare. Food is being produced in greater quantity than ever before. It must be kept wholesome and nutritious.

Penn pledges full co-operation with Refrigeration Service Men to keep equipment functioning efficiently. Our engineering department will gladly help you solve exceptional repair or maintenance problems. And where existing control equipment must be replaced we are prepared to furnish the needed controls, under established priority regulations. Penn Electric Switch Co., Goshen, Indiana.





HE KRAMER Balance Loader SYSTEM (Patented) is a modulating refrigeration system capable of varying from 0% to 100% of full load. and maintaining a fixed minimum back pressure in the suction line and in the compressor crank case. The KRAMER SYSTEM will automatically compensate for varying evapor-

ator loads, resulting in an infinite number of compressor capacity points, giving straight line capacity modulation. The KRAMER SYSTEN is the only one that will give a full range of modulation at a fixed minimum back pressure throughout the entire low side. Send for Catalog BL-342.

KRAMER TRENTON CO., TRENTON, N. J. Heat Transfer

BLAST COOLING COILS • BLAST HEATING COILS • AIR CONDITIONING UNITS • COMFORT COOLERS UNIT HEATERS • COPPER CONVECTORS • FINNED COILS • BARE TUBE COILS • PLATE COILS CONDENSERS • HEAT INTERCHANGERS • WATER COOLING EVAPORATORS • ICE MAKERS UNIT COOLERS: Coolmaster—Panel Type—Floor Type—Freezing Oven—Freezing Shower COMBUSTION ENGINE RADIATORS OIL COOLERS.

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# Best For Metal Shrinking & Fitting Simplified by Use of New Book

# Many Industrial Applications In the Treating of Metals Found For Company's New 'Santocel' Unit

NORTH CHICAGO, Ill.—Temperatures for metal shrinking and other industrial cooling processes that reach down to below -120° F. are attained in the Deepfreeze "Santocel" unit manufactured by the Deepfreeze division of Motor Products Corp.

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Some of the principal applications of such low temperature chilling units are for contraction in compound fitting of metal parts, this practice facilitating slide fits in assembly operations and relieving strain and possible fractures; for the storage of annealed aluminum alloys; for seasoning, setting, and counter

The name "Santocel" is given to these units because "Santocel" is the trade name of the insulation used, which is a vastly expanded processed made by the Monsanto Chemical Co.

Appearance of the "Santocel" unit which holds the -120° F. temperatures is the familiar barrel-shaped design of the Deepfreeze unit. The two condensing units which supply the refrigerating effect are mounted alongside the container.

The double-wall cold cylinder is 24 inches in diameter by 30 inches deep, forming entire walls of chilling compartment. There are more than 31 square feet of primary freezing surface in this unit. Capacity is 58½ gallons, or approximately 7.8 cubic feet.

Container is insulated with 4 inches of Santocel.

#### LOWER RANGE NOT USEFUL

Deepfreeze contends that temperatures lower than -150° F. have no useful effect on high speed steel, but may produce cracking in the metal. Temperatures warmer than -100° F. are relatively ineffective, Temperatures warmer than and thus they say that temperatures ranging between -100° F. and -150° F. are considered ideal for the proper treatment of high speed steel. To back up this contention they offer the following summation of research by M. P. Gordon and Morris Cohen of the Department of Metallurgy of Massachusetts Institute of Technology, on the transformation of retained austenite in high speed steel at subatmospheric tempera-

"From a practical point of view it is important to note that cooling to temperatures as low as -310° F. is not necessary to achieve subatmospheric transformation in hardened high speed steel. The transformation stops below -150° F. In fact a amount of transformation occurs below -100° F. Consequently any readily attainable temperature in the range -100° F. to -150° F. may be used.

"The attendant danger of cracking would also be reduced. In any case the subatmospheric cooling need not be rapid, but must be started very soon after the hardening quench from 2350° F. in order to avoid the stabilizing effect of room temperature aging on the retained austenite.

"The indications are that subzero hardening and tempering of 18-4-1 high speed steel will produce combinations of hardness, strength, and ductility unattainable by ordinary hardening and tempering.'

# SHRINKAGE DATA

According to data collected by Deepfreeze engineers, the approximate shrinkage of rings or cylinders 2 inches in diameter, chilled from 70° F. to -100° F., varies with the metal as shown below:

Magnesium .0045 inches

Typical of metal-contraction applications are those in the manufacof airplane parts. One job currently being engineered is shrinking a 6-inch bearing race into a magnesium-alloy hub. On this, Deepfreeze engineers had to promise a shrink of .00875 inches.

The complication on this problem is that the limits of magnesium casting are plus 0 minus .003, while the mits on the ring are minus 0 plus 001. The manufacturer needs .007

clearance in bringing the parts together, and therefore it is essential to put enough shrink into the job to take care of this clearance requirement in spite of the limits.

Another industrial application of low temperature equipment of this sort is for precision gages. Tool steel and gage steel after heattreating for hardness tend to warp, run-out, or creep, these ills resulting in distortions.

The strain left on the block by hardening causes the block or gage to increase in size as the strain increases. It has long been recognized that subjecting the gage-whether block, ring, or thread—to a temperature of —50° or —60° F. and then letting the gage return to room temperature tends to relieve strain and help the gage to resist the common metallurgical ills.

It has been found through research in this field that reducing the counter-annealing temperature to -100° F. or lower fully relieves the strain, so that once the gage is resized after this freezing, it retains its precise size thereafter.

# Output of Tracer Bullets Stepped Up By Use of Driers

SYRACUSE, N. Y .- The production of "tracer" bullets—which clearly define their paths through the atmosphere with a streak of light-at a recently completed ordnance plant has now been stepped up to maximum output with the use of more than two score driers installed by Carrier Corp. now operating in one of two large chemical drying buildings in the plant "drying

The plant, largest of its kind in the nation, and built in a little more than 16 months at a cost of \$100,000,000, is at present producing tracer ammunition in 30 and 50 caliber sizes for machine-gun and rifle use in training and night fighting by our air forces. The plant is entirely self-sufficient except for smokeless powder, which is shipped in from a powder plant.

Chemical drying equipment is built in duplicate as are all facilities of the plant, one duplicate building on each side of a large avenue bisecting the ordnance works. The duplicate provision is made to keep up production even if one half the buildings were to be destroyed by explosions or attack.

Carrier driers installed represent the largest single job of the type in the war effort. The installation consists of units of both the 40-tray and 80-tray type, located one to a room drying building.

Materials for the tracer and other use move into the drying rooms via conveyor belts and specially constructed carts for small individual loads, from a central depot near each of the drying buildings. The driers are held at proper temperatures, with 100% outside air used to dry the chemicals to an extremely low point. Tray drying time has been considerably cut over originally specified methods in use at some other ordnance plants.

# Information Offered On Belt Vulcanizers

AKRON, Ohio-A catalog section on belt vulcanizers has just been published by the B. F. Goodrich Co. and may be obtained upon request.

All pertinent details on the type of construction of its vulcanizers, dimensions, capacity, and the current necessity to operate them may be found in this publication. A full page is devoted to a table giving all this information in condensed form. There also are descriptions of splicing tools used with vulcanizers and splicing materials.

Substantial belt salvage through the use of vulcanizers has already been achieved by some industrial concerns.

# Deepfreeze Claims -100 to -150° F. Procedure for Bidding on Army Jobs Top Prices Set on **New Airtemp Ducts**

WASHINGTON, D. C .- Good news for Quartermaster Corps contractors is contained in the War Department announcement that the forms upon which bids are to be submitted from now on will be greatly simplified in the future by using the new "Bidder's Reference Book," recently completed by the legal staff under Brigadier General C. L. Cerbin, Director of Procurement Service, Office of The Quartermaster General.

This small pamphlet, first of its kind issued by one of the Armed Services, is a compilation of all the standard instructions to bidders which govern the manner of submitting bids on any kind of purchase. It contains all contract provisions in their latest revised form, used in preparing a contract for the purchase of any Quartermaster item. The books will be issued by Quartermaster Procuring Depots to all bidders on the bidders' list.

In the past, when major procurements were made, the Quartermaster Depots solicited quotations by sending a request for an informal bid to all known prospective contractors. Attached to this request was a bid containing not only the description of the article desired, its specifications, packing requirements, delivery date, and price, but in addition, a series of instructions on how to prepare the bids, and all the contract provisions which were to be included in the contracts thereafter

During the past few years, these bids have become very voluminous, often as long as 25 or 30 pages. As changes were frequently made, government workers had to spend much valuable time preparing revisions and checking their contents.

The new "Bidder's Reference Book" changes all this. Henceforth, a very short bid form, two or three pages long, will be sent to all bidders. It will merely contain the item desired, a description of it, packing instructions, delivery price, and a few similar provisions. Most important, however, it will refer by numbers to the paragraphs in the "Reference Book" governing the procurement of the item in question.

The book will not only save thousands of reams of paper each month, but it will conserve valuable time by eliminating the need for revision of long bid forms by government employes at the various depots. It will also expedite administrative procedures at the Procuring Depots and greatly simplify the submission of a quotation by contractors.

In formally approving the book and announcing its publication, Major General Edmund B. Gregory, The Quartermaster General said:

"The preparation of the "Bidder's Reference Book" is in further line with methods continually being adopted by the Quartermaster Corps to liberalize procurement policies and to simplify procurement methods.

WASHINGTON, D. C .- A schedule of maximum prices for a new composition duct material for use in ventilating systems, which will replace vitally needed metals, has been established, Price Administrator Henderson announced.

The new product which will be used for conducting air in heating and cooling systems was developed by the Chrysler Airtemp Sales Corp., and being an entirely new product has been priced under Section 3 (b) of the general price regulation.

The suggested list of prices and discounts for the product, as submitted by the Airtemp Sales Corp., has been tentatively approved as the maximum prices by the OPA, Mr. Henderson stated.

As in the case of most products priced under Section 3 (b), for which there is no satisfactory production experience and price history, the maximum prices are approved subject to revision when complete cost of production figures are available.

The establishment of these maximum prices was contained in Order No. 30, Maximum Prices Authorized Under Section 1499.3 (b) of the general maximum price regulation. The schedules became effective July 14.

Complete listing of the maximum prices for the new product has not been included in the order, it was explained, but prices will be available at all regional and field offices of the OPA.



Published in the Interest of Equipment Conservation through More Effective Servicing

# Location and Adjustment of **Expansion Valve**

EXPANSION VALVE IN WRONG LOCA-TION. If power element on valve becomes colder than feeler bulb it will cause valve to close and starve evaporator. Don't locate the valve directly under the coil or where it will be cooled too much. Capillary tube must also be clear of cold surfaces.

A. Warm power element and capillary tube with your hand. If power element is too cold this will temporarily correct trouble. Then rearrange

**EXPANSION VALVE ADJUSTMENT. The** thermostatic expansion valve is probably the most misunderstood part of the refrigerating system. As a matter of fact, its function is extremely simple. It keeps the coil completely refrigerated. Always keep that in mind when servicing a system. Adjustment of the valve merely floods or

starves the evaporator. Expansion valves seldom change their adjustment of their own accord. When a system which has been operating satisfactorily suddenly changes, the chances are that expansion valve adjustment has not changed but something else has gone wrong. Always check everything else before attempting to adjust the valve. If a small turn does no good it is good assurance that something else is wrong.

Method:

Detroit valves are adjusted at the factory to keep the coil completely refrigerated. However, if it is desired to adjust the valve, proceed as follows: Open valve so as to slightly flood the evaporator; then turn the adjustment back until the evaporator is completely refrigerated without any flooding over into suction line.

A complete Service Analyzer, giving many helpful hints, will be sent upon request.

	SYA	A P T O	M S		PROBABLE CAUSE	
Condition of Job	Evaporator Condition	Running Time	Suction Pressure	Suction Line Temperature		
Warm	Warm	Won't Start	Low	Warm	Expansion valve badly out of adjustment	
Warm or Starved or Normal Partly Refrig.		Short Cycle	Low	Warm	Expansion valve out of adjustment	
Normal or Cold	Flooded	Too Long	Normal or High	Flooded	Expansion valve out of adjustment	

# DETROIT LUBRICATOR COMPANY

General Offices: DETROIT, MICHIGAN

Canadian Representatives: Railway & Engineering Specialties Ltd., Montreal, Toronto, Winnipeg

# How to Make Use of Instructions On User Care of Refrigeration

It is essential in these times that users of electric refrigeration equipment give some thought to taking better care of that equipment. It is essential not only because of the great need for the conservation of existing equipment and power, but also because there is a scarcity of servicemen, whose time can be allotted to only the most essential calls.

Some of the manufacturing companies have prepared instruction sheets for users, and the industry's "Victory Program" directors developed a very useful poster along such lines.

To add to this, AIR CONDITIONING & REFRIGERATION NEWS is publishing, on this and the facing page, two articles by industry authorities which we believe will prove very helpful to the plan of "better care by the user."

The article on this page by Mr. Seibert is concerned primarily with the maintenance of a household electric refrigerator, while the article on the opposite page by Mr. Spence concerns itself with commercial refrigeration equipment.

Dealers and service companies can clip this material and, arranging it to suit their desires, have it reproduced on sheets or posters to give to customers. Or, if you wish the News to make reprints for use at cost, please write and specify size of sheet, and quantity desired, so that we can quote you the cost. These reprints would be on heavy stock and would carry your name and address.

# Customers Do Not Question Cost of Service, Want to Know When It Can be Done

KANSAS CITY, Mo. — Although service charges for labor have advanced an average of 50% and replacement-part costs (if available) about 10%, Missouri Valley refrigeration and air conditioning customers aren't complaining about how much more it costs to get their refrigeration units fixed this year.

According to R. E. Meeker, service manager, Temperature Engineering Corp., Kansas City, "Local service firms have all the business they can handle. Many of them are running several days behind on service calls and the majority of them about a week. Customers aren't worrying about the cost now, but whether or

not we can get to them.

"One of our biggest difficulties has been to try to get them not to hoard spare parts such as belts. We try to give them as accurate a picture of the market as possible, take them completely into our confidence as to what shortages are likely to exist, as to when we can actually get to their job, and what they may reasonably expect in the way of replacements.

"We get more calls now from customers whose 'machines don't sound just right' and from other indications it seems apparent that the customers are going to be much more preventive maintenance minded in the months ahead."

# What Do You Mean—Thousands Of Pigs Won't Go To Market?

Because they're being processed and stored for local consumption at the point of production by the local food processing and storage plants.



A Frozen Food Locker for every Family

★ IT'S COMING!

The same is true of other food products; such as, beef, chickens, fruits, vegetables, etc.

Here is an industry that is making an additional contribution to the Victory Program by releasing for more urgent use, immense numbers of freight cars and trucks—as well as conserving vital tin and rubber.

# In Use From Coast to Coast

Wherever you go, you find MASTER-built Lockers. They are the "choice of the industry." It's easy to see why they are so popular. Let us send you details.

Endorsed by and sold only through distributors of refrigeration and insulation.

MASTER REFRIGERATED LOCKER SYSTEMS, Inc. 121 Main St. Sioux City, Iowa

Over 300,000 Masterbuilt Lockers in Use

# Instructions for User Care Of Electric Refrigerators

By E. A. Seibert, Director of Service, Kelvinator Division, Nash-Kelvinator Corp.

R ECENT demands on the man power in this country, both for the armed service and for skilled production work, have reduced the available supply of trained refrigeration mechanics to a point where it becomes necessary to conserve their time to that work which requires a skilled man. It is also very necessary to reduce the miles service men travel, as new tires and retreading are so severely restricted that the tires on service men's cars must last as long as possible.

The owner of a refrigerator can do many things to maintain the refrigerator in good condition, and eliminate the necessity for calling a service man.

#### AIR CIRCULATION

The pressure imposing mechanism, called the condensing unit, which is usually in the base of the cabinet, requires free circulation of air, so that the heat removed from the food compartment may be dissipated. Most refrigerators are designed so that they cannot be set too close to the wall. Some of the older models did not have this feature designed into them.

Check your refrigerator location. If air cannot flow from under the front base of the refrigerator to the rear and up in the back, circulation is retarded.

#### CONDENSING UNIT

The circulating of air over the condensing unit carries kitchen lint and grease, which deposits on the parts of the unit. If this dirt is allowed to accumulate and remain on the unit it increases the cost of

a belt. It always is easy to replace the belt. Put it on the small pulley first, then on to the larger pulley. If the new belt is too loose it is always possible to tighten by moving the motor farther out. The motor base is slotted for this purpose. Most motors have spring belt tighteners on them, which automatically provide the proper belt tension.

A good safety measure is to have an extra belt available. The part number is always on the belt and they can be purchased from the dealer from whom the refrigerator was purchased.

#### THE DOOR

The door should be tight so that air cannot enter. A simple way to test for fit is to put an electric light inside connected to a drop cord made from lamp cord. (Do not use a heavy electric cord.) Close the door in the usual way. If light shows between the door gasket and the cabinet, the door needs adjusting. This can usually be done by moving the latch strike in. The strike is the part into which the latch hooks.

If air can enter around the door, frost accumulates more rapidly on the cooling unit and may also cause condensation of moisture on the interior of the food compartment. Sometimes it is not possible to get a tight door fit on account of a flattened gasket, so a new gasket is needed. The gaskets on many doors can be replaced by the owner and can be purchased from your dealer.

#### DEFROSTING

The cooling unit is designed for

cooling unit is reduced.

The effect then is the same as it would be if too small a unit was used. Too small a cooling unit would cause long running time, increased cost of operation, and rapid accumulation of frost; therefore, it pays in two ways to defrost the cooling unit before it accumulates too much frost: a reduction of operating costs and better refrigeration.

Never, under any circumstances, use a knife or pointed tool to remove frost. Let it melt off.

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The thermostat controls the temperature of the refrigerator. It should be set so that the temperature is kept at the point where the food is preserved in the best condition. As soon as the need for fast freezing is finished do not neglect to return the thermostat to the normal position.

When the thermostat is set at the cold position it causes increased running time, which increases the cost of operation, reduces the temperature of the cooling unit, which causes frost to accumulate more rapidly and a reduced food compartment temperature which, in some refrigerators, causes drying of the food contents or freezing.

#### THE INTERIOR

The food compartment can be kept sweet and clean by washing occasionally with a mild solution of soda and lukewarm water. The protective coating on the shelves is better preserved if anything spilled on them is wiped off within a short time.

#### THE EXTERIOR

The exterior finish of most modern refrigerators is a hard surfaced synthetic baked enamel. The use of a good wax base refrigerator polish, which is also a cleaner, once a month, will maintain the original clean glossy finish for many years. Do not use an abrasive polish, it is not needed and will harm the finish. Ask your dealer for a bottle, he will have it.

#### CAUTION

Before doing anything on or around the condensing unit, be sure that the thermostat is set at the off position or that the connecting cord is pulled out of the base plug in the wall.

# MOTOR PROTECTION

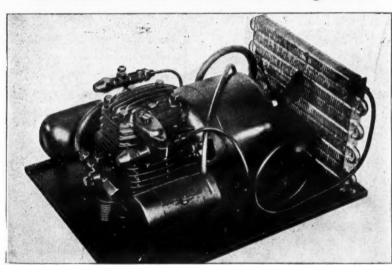
Where a fuse is used to protect the motor, the correct size fuse must be used or the motor will not be protected. The ampere rating of the motor, is stamped on the name plate, on all motors. If the ampere rating is 3.6 Amps. a 3.5 or a 4 ampere fuse is correct. If it is 5.2, a 5 or 6 ampere fuse is correct. A too heavily rated fuse provides no protection at all.

# OILING THE MOTOR

The motor of the open type unit should be OILED twice each year. A light motor oil should be used. Never use a very light oil, such as sewing machine oil. The proper oil can be purchased from most any filling station.

Oil both bearings slowly, allowing time for a sufficient quantity of oil to flow into the oil wells. Wipe off any overflow or spillage so that it will not get on the belt. Oil on the surface of a motor catches any dust from the air.

# The Heart of the Household Refrigerator



A typical household refrigeration machine is shown above. To operate properly, the condenser (the radiator like part at the right) must be cleaned regularly so that air may pass through it freely. The passage of air through the condenser is apt to carry dirt into the motor so the motor should be cleaned of greasy dirt regularly.

operation and sometimes causes a breakdown.

The condenser, which is shown above, must be clean so that air may pass through it freely. A clogged condenser causes long running time and increased cost of operation and may cause a breakdown. A bottle brush and the suction hose of a vacuum cleaner are ideal for clean-

The motor on open type units, Fig. 1, attracts dirt as it draws air into it to keep it cool. Clean it thoroughly, paying particular attention to the openings in the end bells. The dirt that gets into a motor causes more failures than the

ing a condenser.

operation of the motor.

Remove all of the dirt from other parts of the condensing unit. A clean piece of mechanism fails much less frequently than a dirty one.

Every effort must be made to prevent motors from being burned out. A burned out motor must be rewound with new copper wire, which is one of the critical metals and therefore, it is extremely hard to get. Only a very limited quantity is available for repair work.

# THE BELT

Wipe the belt occasionally. It should be free from dirt and oil. If it squeaks rub it lightly with a piece of sand paper. It is not necessary to loosen any bolts to replace

each size refrigerator so that it will occupy the least amount of space but will be large enough to cool the refrigerator. If more than ¼ inch of frost is allowed to accumulate on the cooling unit, the capacity of the



# **How to Keep Refrigeration Going** In Stores, Restaurants, Plants

14 Things That the User Can Do to Make His Refrigeration Equipment More Efficient

> By John H. Spence, commercial refrigeration engineer, Allied Store Utilities Co.

following article was originally published in the June issue of Meat Merchandising and is reprinted with the permission of the publishers.)

Now as never before your refrig- @ eration equipment takes on new importance in your market. Uncle Sam says no more new meat display cases, coolers, refrigeration equipment without a priority order. This means you must do everything possible to keep your present equipment in perfect working order. It's not only patriotic, but it's your duty to do so.

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The government has made adequate provision for the maintenance and repair of your equipment. It has licensed all authorized refrigeration service companies and a procedure has been set up whereby authorized refrigeration service men may obtain parts and material required to keep your refrigeration equipment in good working order. See your service men for help on needed service.

What can you do to help win the war? Here are a few simple rules that will assist in maintaining the highest operating efficiency, eliminate food spoilage and shrinkage, and lower the cost of operation.

1. Secure the services of an experienced, and reliable refrigeration service man and request him to check your refrigeration equipment every 90 days during the cool months and every 30 days during



2. See that the two bearings on the electric motor on your refrigeration machine are oiled according to the manufacturer's recommendations, usually every 30 days to prevent burnt out bearings.



3. Keep the condenser or radiator on the refrigeration machine free of dust and lint so that the fan on the electric motor can draw air through it to cool the refrigerant. A restricted condenser causes high head pressure, lowers the compressor capacity, increases the operating costs, and overloads the motor. If the motor is not properly protected with proper size fuses or automatic reset devices, the motor may burn up and you will have an expensive repair in addition to using up vital materials needed for war. An electric motor, properly cared for, will last for years. Have your electrical equipment checked by a competent



4. Do not permit boxes or papers to be piled around your refrigera-

tion machine restricting air circulation, as restricted air circulation may affect your refrigeration machine.



5. See that motor pulleys and flywheels are properly aligned. Misalignment of those two pulleys will cause excessive belt wear and materially shorten its life. Belts for electric refrigeration machines will become increasingly difficult to obtain as they contain rubber needed for our war effort. If belts can be depressed 1 inch or more on electrical refrigeration machinery up to 1 hp. on most makes of machines, the belts should be tightened by adjusting motor or belt tighteners. However, belts should not be tightened where excessive strain would be on electric refrigeration motor bearings.



6. See that the head bolts of the compressor are tight to prevent blowing of gaskets and the loss of refrigerant. Most refrigerants used in refrigeration machines in stores contain a derivative of chlorine, a chemical vitally needed in making explosives for our armed forces. Leaks in a refrigeration system cause loss of refrigerant, improper refrigeration, higher operating costs, additional load on power lines, and power is needed for the production of war materials. 7. Unless there is a specific need

for temperatures lower than 36° to 40° F., do not operate food storage or display equipment below those temperatures. For economy, operate your meat display cases at the highest possible temperatures with a minimum of spoilage, as lowering the temperature decreases your capacity in your machine and increases your operating costs. For a storage temperature in your meat display, 40° to 42° F. has been found to be very satisfactory as those temperatures aid in lowering your operating costs, help to maintain high relative humidity, which means less shrinkage and less trim loss. Sausage, particularly those brands made with cereal, maintain a fresh appearance longer when kept in temperatures of 42° to 45° F. The cut surface of sausage tends to turn gray when displayed in temperatures below 42°. Vegetables retain their freshness and moisture when displayed under electric refrigeration at temperatures of 45° to 55° F. Cheese and other dairy products can be economically displayed in temperatures of 45° to

8. If the electric refrigeration machine is equipped with a water-cooled condenser, the water regulator should shut off the flow of water when the machine stops running. Electric power in some form is required to furnish water to cities and therefore do not permit waste of water in your refrigeration equipment. The head pressure in your electric



refrigeration machine, when operating automatically, causes the water valve to open furnishing the required amount of water to cool the refrigerant as it flows through the condenser. In the wintertime, be sure that the water-cooled condenser does not freeze as freezing may crack the tubing permitting water to enter the refrigeration system or a loss of refrigerant and serious damage to the entire refrigeration installation.

9. If the larger refrigerant line on your electrical refrigeration installation is frosting more than a few inches where it comes out of a fixture, generally, it is an indication that the expansion valve is opened too wide and may cause improper refrigerating conditions in temperature and longer running cycle with subsequent increase in cost of operation.

10. Do not permit your refrigeration machine to run continuously as electric refrigeration machines installed for food storage and display equipment are designed to start and stop automatically according to the temperatures desired. Likewise, an electric refrigeration machine should not "short-cycle," that is, run every two or three minutes. Such operation usually indicates shortage of refrigerant, which means a leak in the system or restriction of the expansion valve. Such operation causes excessive wear on the electrical refrigeration machine, causes unsatisfactory temperatures, and higher operating costs.



11. Practically all modern food storage and display equipment is designed to operate on a defrosting cycle, that is, frost will melt from the coil each time the refrigeration machine shuts off. Frost and ice accumulation on the coil may result from your request to the service man to lower the temperature in your display fixture or may result in improper adjustment of the low pressure control on the machine. If in doubt regarding the frost on the coil, check with the dealer from whom you purchased the equipment and, if it is found that the coil fails to defrost at the end of each running cycle, have the service man reset the control for that type of refrigeration as a heavy frost accumulation on the coils causes increasing higher temperatures, low relative humidity, and high electric bills.

12. Unless you are thoroughly experienced with electric refrigeration operation, the resultant damage to the equipment, in attempting to make an adjustment to save a few cents, may amount to many more dollars than the cost of service rendered by an experienced service man. It is good insurance to have your electric refrigeration equipment serviced by a reliable service man.

13. Since most display cases are equipped with rubber door gaskets, which are no longer available, keep rubber free of grease and oil to prolong their life. The food display case, walk-in cooler, and other equipment should be kept clean and sanitary by washing thoroughly at least twice a week to eliminate bacteria that multiplies rapidly after 48 hours.



14. Don't permit scraps of food to remain in your refrigerating equipment to contaminate fresh foods. Be on the alert for rust spots in the metal liners. Refinish with a good grade of enamel to protect the surface, oil the hinges and latches, keep screws tight in the hardware and exercise every precaution to keep your equipment in good order.

# FAMOUS LIFE LINES





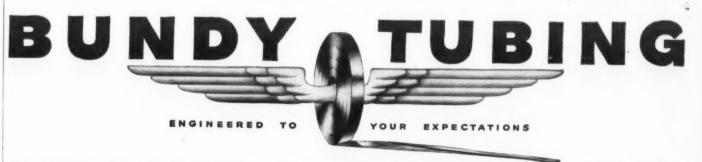
DAY BY DAY, war production grows. New naval vessels and merchantmen slide down the ways—new tank plants pour out their mobile fortresses—new aircraft plants get into mass production-new engine and propeller plants swing into their stride.

With this growth in war production the demand for Bundy Tubing grows apace. For in every branch of the military, naval and supply services, Bundy Tubing is doing its part. Wherever fuel or lubricants or refrigerants must be carried, vacuums formed or hydraulic pressures transmitted . . . wherever mechanical or structural applications of tubing require light

weight and strength . . . there you are likely to find Bundy Tubing.

Bundy Tubing has long been known in the metal trades for its strength, ductility and resistance to vibration fatigue. So it is only natural that, as Bundy's peacetime customers turn to war production, they turn to Bundy for their tubing, and they tell other manufacturers of their experience with Bundy.

If you have a war contract that requires tubing, you should have the complete Bundy story, and possibly the assistance of Bundy's research laboratory. Write Bundy Tubing Company, Detroit, Michigan.





BUNDYWELD double-walled steel tubing, hydrogen-brazed, copper-coated inside and outside. From Capillary sizes up to and including  $\frac{\pi}{\Lambda}$  "O. D. This double-walled type is also available in steel,



BUNDY ELECTRICWELD steel tubing. Single-walled - butt - annealed. Also furand including 54" O. D.



BUNDY "TRIPLE-PURPOSE" MONEL tubing. Double-walled, rolled from two strips, joints opposite, welded into a solid wall. Available in all Monel, Monel inside -steel outside, and Monel outside -steel inside. Sizes up to and including 3/4" O. D.

Trade Mark registered U. S. Patent Office; Established 1926 and registered as Electric Refrigeration News

F. M. COCKRELL, Founder

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# Refrigeration Will Help Win the War

# It's Our Fault, Mr. McNutt

PAUL McNUTT, the capable and well-liked-by-industry chief of the War Manpower Commission, has just committed a grievous error of omission. He didn't include refrigeration among his list of 34 broad essential activities "the products, facilities, and services considered necessary to war production and essential to the support of the war effort."

This, despite the fact that in at least 23 of the 34 "essential activities" refrigeration is necessary somewhere along the line. Thus, if refrigeration production is adversely affected by Mr. McNutt's ruling, approximately twothirds of the "essential activities" listed by the War Manpower Commission might have to close down for want of a vital step in their processing.

#### NEED TO EDUCATE MANPOWER COMMISSION ON THE FACTS

This is to say nothing of refrigeration requirements for the preservation of food-on the farm, in transit in dairies, in warehouses, in processing, in stores, and in homes. We repeat now what we have been reiterating for many, many months: America must go on eating, no matter what else happens. We must eat before we can work or fight.

There is probably no immediate danger to the industry from this War Manpower Commission's ruling. But no time should be lost on educating Mr. McNutt and his fellow workers. It's obviously an oversight based on insufficient information. That information must be presented to them so well that it gets into their heads.

Once they understand the implications of this oversight we have sufficient faith in Mr. McNutt's obvious

fairness and good sense to believe that the error will be rectified. True, scads of other industries—not on the list of 34-will be bombarding the War Manpower Commission with ingenious pleas. It will be deemed much easier to resist them all than to make any exceptions. It will also be difficult to admit the original error.

But, too much is at stake here for these normal considerations to be effective for long.

If proper representations are not made to Mr. McNutt, if the error is not rectified, in 1943 it's possible that we might have a refrigeration crisis somewhat comparable to the rubber crisis we now face.

#### LACK OF REFRIGERATION WOULD AFFECT WAR PRODUCTION

If priorities on manpower stymie refrigeration equipment production, the war effort might be held up along the line. The howls of anguish which would arise then from all parts of the world (our soldiers must have refrigeration wherever they are) might be such that official heads would fall like apples when an overladen limb is struck.

It is our own belief that the manpower needs of our war plants as projected by Mr. McNutt's office may turn out to be excessive, in the light of the 30% to 40% greater production we are getting from present plants over what was predicted.

As one example, Ford's Willow Run bomber plant will employ less than half the originally estimated number of workers. Similar facts are turning up elsewhere. And projected new plants are now being cancelled.

Even so, there is going to be a labor shortage, particularly in certain skilled lines. And some day next year Mr. McNutt is liable to reach into a refrigeration manufacturer's plant-devoted 100% to war orders—and take out some key men . . . UNLESS sometime soon refrigeration manufacturing and repairing go on the essential list.

#### REFRIGERATION REPAIR SERVICE IS MOST IMPORTANT

Speaking of repairs, the War Manpower Commission lists the following as essential "repair and hand trade services": Blacksmithing, armature rewinding, electrical and bicycle repair, automobile repair and service, harness and leather repair, clock repair, tool repair and sharpening.

There is no mention of refrigeration. Yet a valid case can be made that refrigeration repair service is possibly more important than any of those

It's all our fault, Mr. McNutt. Ever since this war started this industry has found itself in difficulties because the essentiality of its services just wasn't well enough known to the public at large. The industry has sadly neglected its public relations, just as it has neglected its internal relations.

Refrigeration is something the nation has taken for granted. It has performed its services quietly, in the background, without fanfare, and apparently almost without notice.

That doesn't make it any less essential.

A grievous error has been committed, an error which if not rectified could lose the war for us. It's an error for which we must all share the responsibility. Let's all get to work right now to set it straight!

# They'll Do It Every Time



# LETTERS

#### NEWS AND BULLETIN BRING THE NEWS JUST ON TIME

Route 3, Box 496L San Diego, Calif.

Editor:

It just seems like the Paper and Bulletin come just in time to bring out all the news that has developed about everything a person is interested in. It seems to have things that you wouldn't find out otherwise. want to thank you for continuing the fine service of the NEWS.

BILL WINETEER

# COMPLETE TEXT OF INVENTORY LIMITATION ORDER L-63

Marshall-Wells Co., Ltd. Winnipeg, Man., Can.

Editor:

Will you please send for the writer's attention a reprint of No. L-63, which seems to be having such an effect on the parts

> H. N. ADDISON, Refrigeration Dept.

Answer: Complete text of Suppliers' Inventory Limitation Order L-63 was printed on page 21 of the April 13 issue of AIR CONDITIONING & REFRIGERATION NEWS.

# THE NEWS IS NEEDED IN THE NAVY

U.S.S. (-) San Francisco, Calif.

Dear Sir:

Please renew my subscription to the NEWS for another year, my third.

Your articles for service men in the past two years have been greatly appreciatedkeep them coming!

Request my mailing address be changed to San Francisco.

J. E. BAKER

#### AN OLD FRIEND FROM OPACS BECOMES A SUBSCRIBER

Editor:

Maybe you remember me, or maybe I suggest OPACS days last summer with meetings amidst the furnace pipes in the basement of Q Street, sharp threats and timid programs, a personnel that changed every five minutes, and an office that moved every ten, and a priorities program that seemed never to come to rest-days perhaps which you're glad to forget.

I don't mean to haunt you, but ever since I was converted to war production last November, and particularly lately when the WPB programs have been put in force in the industry, I've been wondering about the NEWS and intending to write you. I've heard from Mr. Dinegar's office occasionally, and had two very kind and encouraging letters from Mr. Graff. Still, I can't say I've really kept up with the industry gossip. Have you had to do any more rush research jobs for the Government the way you did last July, and how, I wonder, is the conversion to defense production affecting the dealers and jobbers, the companies in CRMA, and the NEWS? I wonder, in fact, all sorts of things that probably never were and are certainly not now any of my business.

At the same time, as my curiosity has been growing, I've been able to accumulate a few spare dollars, mainly because an improperly air conditioned tent sent me here with a slight case of pneumonia, and made it impossible for me to spend even the dollar a day I'm now earning. I'm sending along a two-dollar money order for a subscription (for six months or whatever is two dollars' worth) to the NEWS, and am looking forward to a good deal of satisfaction reading it.

I should also be glad for any words of wisdom you might add personally, if you have time for a note. Please remember me to Mr. Sullivan, Mr. Hart, Mr. Henderson, and anyone else who may be cursed with such a memory for minute unpleasantness as not to have forgotten me along with the other confused and fumbling things of nine months ago.

I hope everything is going well with you.

BILL PARKER

By Jimmy Hatlo

# COULDN'T DO WITHOUT THE INFORMATION FROM NEWS

Firestone Home & Auto Supply Stores 32nd & University Ave. San Diego, Calif.

Editor:

Please send me four copies of Reprints on Combined information as per page 16 of AIR CONDITIONING & REFRIGERATION NEWS Supplement of May 25.

Don't know what a good refrigerator man would do without your worthwhile informa-

Good luck to you.

J. FRY

# **DEFENSE WORKER NEEDS NEWS**

Hawthorne, Nev.

Enclose please find P.O. Money Order \$4 for my subscription to REFRIGERATION NEWS for the coming year. Am on defense work out here at Naval Ammunition Depot and cannot afford to be without the NEWS, it is life to me.

GEO. PRONG

# FIGHTING FOR THE INDUSTRY

Hollister Electric Co., Inc. 27 E. 2nd St. Dayton, Ohio

Editor:

You have been doing a fine job of fighting for the refrigeration industry and keeping

R. R. HOLLISTER

#### SEASONS GREETINGS (DELAYED) FROM SPAIN

256 Muntaner Barcelona (11), Spain Dec. 18, 1941

Editor:

Uncertain, unhappy times these we are going through; yet, with ardent hopes in \$ brighter, more venturous future, I set aside gloomy, troublesome thoughts and want to my deep appreciation for our express pleasant association and extend to you all, in all sincerity, my best wishes for a Merry Christmas and a Happy Prosperous New Year.

JOSE LOPEZ ZUERAS

Editor's Note: This letter, mailed before Christmas, was just received by the NEWS.

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# What Dealers Are Doing About Merchandise Shortages

Nothing To Sell?--Not For This Dealer



When Virginia Appliance & Service Co. set out to take on some alternate lines, they didn't stop when they found a couple of possibilities. Note the variety in this advertisement for the opening of their "Gadget Shop."

# Dealer's 'Gadget Shop' Has Everything From Butter Curlers to Poultry Shears

ALEXANDRIA, Va. — "Butter curlers and flower pots." That might be a strange combination—but how about "memo pads and cherry tongs" or "cocktail strainers and poultry shears" or even "string holders and egg openers?"

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IEWS.

These are only a few of the items for sale at the Gadget Shop which was opened recently by the Virginia Appliance & Service Co., appliance dealer of this city, in its expansion of services, according to announcements made by William T. Coe, owner and manager.

In announcing the opening of the new department, Mr. Coe attributed the expansion to the fact that only a limited line of electrical appliances are now available, leaving the firm with an outlet for other types of commodities. The new shop will be operated along with the regular business and by the same personnel.

In addition to the items mentioned above the Gadget Shop is supplied with napkin holders, ketchup extractors, chrome servers, egg timers, wood spoons, canape cutters, spatulas, cheese spreaders, measuring spoons, glass knives, grapefruit corers, skewer sets, garnishing sets, bottle openers, butter moulds, bacon and toast servers, and olive tongs.

Supplies of relish servers, cheese corers, salt and pepper shakers, cake

and pie servers, butter gauges, tea strainers, lucite knives, tomato slicers, handy forks, plastic graters, mixing spoons, salad sets, knife racks, and hundreds of other items are on display there.

The Virginia Appliance & Service Co. is also featuring a selection of Mitchell and Artistic Lamps, Orna Wood Creations, and Pyrex Ovenware-Flameware along with their regular stock of appliances (which incidentally is imported to this country by the Barry Importing Co. of New York City).

The gadget shops are situated in both the Alexandrine and Arlington stores. The firm's Alexandrine store is operated by Mr. Coe and is located at 917 King St., while the Arlington branch, 3119 Wilson Blvd., is managed by Mrs. Coe.

# 'War Workers' Dept. Has Reconditioned Units

TOLEDO—A "War worker's appliance department" has been opened by the Lion Store here, consisting of a separate show space in which rebuilt electric refrigerators, ranges, washing machines, and other appliances are being shown and sold.

# Big St. Louis Dealer Moves Across Street To Sell Service Only

ST. LOUIS—The H. S. Woodard Co. here, formerly the largest Frigidaire dealership in the city on commercial and domestic refrigeration, has given up its large building at Lindell and Tersa Sts. and moved into a small shop at 3427 Olive St. directly across the street where H. S. Woodard, owner, will depend upon service work to keep his name alive for the remainder of the war.

A staff of 12 salesmen has been cut to one, according to Mr. Woodard. All service employes, however, have joined the staff of Service Engineering Co., a refrigeration service shop into which the Woodard organization has been moved. "We plan to sell service as we did appliances in the past," Mr. Woodward said. "We will handle commercial refrigeration, package air conditioning, and domestic refrigeration from the small shop, which given our name and in almost the same location, we hope will keep our customers thinking of us through the war."

# **Baltimore Distributors Discontinue Vacations**

BALTIMORE — Because of the present urgent conditions in appliance distribution, a group of wholesalers here have agreed to dispense altogether with summer vacations for employes.

In lieu of the annual week or two weeks, employes will be given all Saturdays off, probably for the entire summer, this time to count as vacation time. Wholesalers included are Lincoln Sales Corp., Henry O. Berman Co., David Kaufmann's Son's, Westinghouse Supply, Associated Distributing Corp., and Nelson & Co. All firms had attempted to maintain a five-day week of this kind several years ago, but the venture did not succeed until war conditions made it a necessity.

# Dealer Uses 3 Stores For Used Appliances, 2 for New Products

TOLEDO—The Simmons Appliance Co. here, operating five appliance stores in the city, is now using only two of them for new appliances, and devoting the other three strictly to reconditioning and reselling of used appliances. Dorsey D. Simmons, head of the firm, is advertising for used appliances in all neighborhood newspapers in Toledo, offering top prices for old appliances for cash, and has to date obtained enough ranges, refrigerators and washing machines to keep each store at peak operation. A markup of 32% is averaged over all such appliances, and will be maintained while conditions permit it, Simmons explained

# Boston Dealers Favor Friday Night Opening

BOSTON—Appliance dealers here are starting a concerted move to switch late store hours from Saturday, as was formerly the custom, to Friday night, when the stores will remain open until 9:00 o'clock. The change will be made, according to prominent dealers, on the basis that war industries and other industries have begun making payday come on Friday instead of Saturday—and by remaining open until late the same day, the stores can close on Saturday noon as during the pre-war period.

# Conserve AMERICA'S ASSETS FOR WICTORY

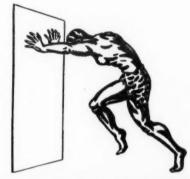
Like so many other American manufacturers, we are requisitioned by our government to curtail production of peace-time commodities to release our machines and materials for America's gigantic program for VICTORY.

This curtailment imposes on every liberty-loving American the patriotic duty to discourage wastefulness and to conserve America's assets so that the standard of the American way of life can be continued despite war-time restrictions.

To-day, more than ever, we are particularly proud of the high standard of excellence which we have always exacted for all items of KASON HARDWARE. The rugged serviceworthiness which has been so painstakingly built into this hardware can be depended on to prolong its service, with simple care, through this period of emergency until VICTORY again releases our equipment for peace-time service.

# Conserve

Do not discard any hardware taken from old refrigerators, ice boxes and cabinets. In most cases these can be repaired and refinished for further use. Consult us about such service. We are anxious to co-operate with you and help you solve these emergency problems.



# KASON HARDWARE Corporation

127-137 WALLABOUT STREET, BROOKLYN, NEW YORK

# Maytag to Discontinue Certain Claims in Ads

WASHINGTON, D. C.—The Maytag Co., Newton, Iowa, engaged in selling washing machines, has stipulated with the Federal Trade Commission to discontinue representing by such words and phrases as:

Through the use of the words "entirely safe" or the word "safe," or words of a similar meaning, that there is no possibility of injury from the use of the wringer on the Maytag. By use of the expression "standard of the world for washer value," that the Maytag has been designated as a world standard for washer values by any person, group, or organization with authority to set such a standard.

"That the wringers on most competing washing machines have sharp, protruding corners, or that there are 4,000,000 owners of Maytag washing machines," are other phrases that will be discontinued in their representation.

# New Sears' Catalog Has Many Items Missing

CHICAGO—The "missing list" of the new Sears, Roebuck & Co. catalog included practically all electrical household appliances, irons, door bells, refrigerators, and washing machines.

The catalog is 196 pages smaller than a year ago and shows drastic war-spurred changes in merchandise.

Electric radios, battery type excepted, have disappeared, as have electric motors, stoves, steel beds, curtain rods, stainless steel tables.

For the convenience of customers these items are listed on a page preceding the general catalog.

Prices in some cases show small advances by comparison with the Spring and Summer book, but there are 18,535 items below the price ceilings established by the OPA for the catalog. On this subject a statement said:

"The entire book, of course, is priced according to the maximum price regulations bill."



TO ASSURE QUICKER DELIVERIES
RETURNEMPTY CYLINDERS PROMPTLY!

There is a shortage of cylinders for refrigerants. If you will return your "Artic" Methyl Chloride containers as soon as empty, your deposits will be

repaid immediately—and you will prevent delays in shipments of "Artic" to your shop! Bound up any empties you have now and ship them back!

# **Proposed Commercial Standard For Commercial Electric Refrigeration Condensing Units**

Minimum Standard Specifications and Test Methods Are Established in Proposed Code

As adopted by the Manufacturers' Conference of June 23, 1942.

Purpose
1. The purpose of this commercial standard is to establish minimum standard specifications and methods of test for commercial electric refrigeration condensing units, for the guidance of manufacturers, distributors, installers, contractors, and users.

Scope
2. This standard covers requirements, rating, motor loading, and testing of aircooled and water-cooled, belt driven comparison condensing mercial electric refrigeration condensing units, in ½ to 3 hp. sizes, and water-cooled units of 5 hp., using methyl chloride, FREON 12, or SO<sub>2</sub> refrigerants. It covers minimum requirements for controls, shut-off valves and receiver tank capacities. It also covers a uniform method of certifying compliance with the standard and installation and service pointers. For purposes of field selection the machines are divided into three the machines are groups as follows:

Bange of Suction Temp. (5° Steps)
As Published
Minus 25° F. to 0° F. Group As Published

(1) Low temp. Minus 25° F. to 0° F.

(2) Standard temp.0° F. to plus 25° F.

(3) High temp. Plus 25° F. to plus 45° F.

Definition

3. Manufacturer. A manufacturer, for the purpose of this Commercial Standard shall be the company or organiza-tion which evidences its responsibility by all of the following:

(1) being a prime fabricator of commercial refrigeration machines.
 (2) qualifying as such by the machining of rough compressor castings, and
 (3) affixing its name or its distributor's

name and/or nationally registered trade-mark or trade name to the compressor or condensing unit.

General Requirements

4. Safety.
4a. The refrigeration unit shall meet the safety standards of Underwriters' Laboratories, Inc., Standard for Unit Refrigerating Systems and Standard for Air Conditioning and Commercial Refrigerating Equipment (both Subj. 207), December, 1941, and subsequent revisions.

4b. Presence on the refrigeration unit of label of Underwriters' Laboratories, Inc., shall be accepted as evidence of compliance with this safety requirement.

5. Quietness. The unit shall be reasonably from distributions recognition. ably free from disturbing mechanical

sound.

6. Badio interference. The unit shall cause no unreasonable amount of radio

Table 1—Standard Equipment for Commercial Electric Refrigeration Units, Belt Driven

	Air Cool	ed	-Water C	ooled
Horsepower	1/5, 1/4, 1/3, 1/2, 3/4, 1 (Single phase only)	1½, 2, 3 (Single or 3 phase)	1/3, 1/2, 3/4, 1 (Single phase only)	1½, 2, 3, 5 (Single or 3 phase)
Compressor with flywheel	Yes	Yes	Yes	Yes
Condenser	Yes	Yes	Yes	Yes
Receiver (may be com-	77	37	37	30
bined with condenser).	Yes	Yes	Yes	Yes
Motor Thermal overload protec-	Yes	Yes	Yes	Yes
tion other than fuses	Yes	Yes	Yes	Yes
High pressure cut-out	No	No	Yes	Yes
Refr. charge — "Holding"	Lbs.		200	200
Self contained type	1, 1, 1, 2,			
Remote type		5 lbs.	2, 3, 3, 5 lbs.	5 lbs.
Belt guard,	Wan	Yes	Yes	Yes
remote type only	Yes	Yes	Yes	Yes
Oil charge Low pressure or temp.	Yes	ies	res	res
control, remote type only	Yes	Yes	Yes	Yes
Service valves		Yes	Yes	Yes
Fusible plugs or relief	. 200	200		
valve	Yes	Yes	Yes	Yes
Water regulating valve			Yes	Yes
Belt or belts	Yes	Yes	Yes	Yes
Condenser fan	Yes	Yes		
Base	Yes	Yes	Yes	Yes
Liquid shut-off valve Wiring between control	Yes	Yes	Yes	$\mathbf{Y}$ es
and motor	Yes	Yes	Yes	Yes
Nameplate	Yes	Yes	Yes	Yes



Table 2—Maximum Peak Load For Single-Phase, Polyphase, and Direct Current Motors Of Speed 1,700-1,750 R.p.m. Inclusive

OFF
.375
.43
.56
.80
1.17
1.5
2.25
3.00
4.5
7.0

interference.

7. Manuals. The manufacturer shall have available a service and installation manual for his authorized dealers.

**Detail Requirements** 

8. Cooling medium. Refrigeration units 1/2 to 3 hp. are air, water or evaporative cooled, above 3 hp. are water or evaporative cooled.

 Standard equipment. The standard equipment for commercial electric re-frigeration condensing units shall be as shown in Table 1.

10. Compressors.

10a. Each condensing unit of five horsepower, or less, shall not require more
than the horsepower shown in Table 2, when tested for performance at rated voltage and 110° F. ambient temperature and at the maximum suction temperature

and at the maximum suction temperature of the group into which the particular condensing unit on test falls.

10b. Published figures of the temperature-capacity ratings for compressors shall be in five-degree increments in three groupings, as follows:

(1) Low, minus 25° F. to 0° F.

(2) Standard, 0° F. to plus 25° F.

(3) High, plus 25° F. to plus 45° F.

10c. Additional ratings at other ambients may be listed if so desired.

11. Motors.

11a. Motors used on commercial elecrefrigeration condensing units shall conform to the standards of the National Electrical Manufacturers Association as given in part below.

11b. Maximum peak motor load for each size of unit shall be as shown in

11c. Other motor requirements shall be in accordance with NEMA Motor Standards of 1941.

12. Controls.

12a. Each air-cooled refrigeration unit,

13b. to 3 hp. inclusive, shall be equipped with a control as required in Table 1.

12b. Each water-cooled refrigeration unit shall be equipped with controls as required in Table 1. 13. Receiver tanks. The minimum volume for receiver tanks shall be as given in Table 3.

14. Shut-off valves. Minimum standards for shut-off valves shall be as shown in Tables 4, 5, 6, 7, and 8.

#### Refrigeration Unit Testing and Rating

15. Rating conditions. The conditions for performance rating shall include the following: (a) Water inlet temperature of water

cooled units 75° F.

(b) Water outlet temperature of water cooled units 95° F.

(c) Suction gas (refrigerant vapor entering the condensing unit) superheated to 65°

(d) An ambient temperature 110° F. for both self-contained type and remote

type units.

16. Production tests on units.

16a. Each unit shall be manufactured and tested to accomplish the following:

1) Units shall be manufactured so that a) Proper alignment between motor and compressor flywheel is assured.

(b) All parts are interchangeable with

(c) The motor load shall not exceed the requirements herein.
(d) The refrigerating capacity of the compressor shall conform to the limits of the group for which designed.

(e) Controls and shut-off valves function properly. Complete system is dehydrated.

(2) Each assembled unit shall be bench-tested and adjusted for a suitable period of time to reveal and eliminate

(a) Oil leaks
(b) Refrigerant leaks

(c) Electrical defects (d) Excessive mechanical noise and

(e) Other defects.

# Methods of Test

17. Compressors. 17a. For the purpose of performance ratings the maximum suction tempera-

tures in each group shall be as follows:

(1) Low, plus 5° F.

(2) Standard, plus 30° F.

(3) High, plus 50° F.

17b. The machines shall be tested in accordance with the methods of test outlined in American Society of Refrigerent. lined in American Society of Refrigerat-ing Engineers Circular No. 14.

# Labeling

18. the name of the manufacturer or distributor, model number, and serial number shall be shown in a conspicuous

place on each unit.

19. Warranty. The refrigeration unit shall be warranted by the refrigeration unit manufacturer against defects of (Concluded on Page 11, Column 1)

# Table 3—Minimum

	Receiver-Tank V	olume
нр.	Remote Type Units Cu. in.	Self Contains Type Units Cu. in.
1/5	55	55
1/5 1/4 1/5 1/6 1/6 1/6	55	55
3/3	75	75
3/4	100	100
3/4	250	
1	325	
11/2	450	
2	550	
3	700	
	1.000	

# Nema Motor Standards of 1941

#### NEMA STANDARDS

Motors used on commercial electric refrigeration units shall be of the general purpose type and shall comply in every respect with National Electrical Manufacturers Association motor and generator standards (Publication No. 41-64 and superseding issues) as follows:

Small power motors direct current MG8- 30 to MG8- 72 inc.

Small power motors alternating current MG8- 80 to MG8- 122 inc.

Large power motors direct current MG9- 10 to MG9- 15 inc.

Large power motors single phase MG9- 310 to MG9- 414 inc.

Large power motors polyphase induction MG9- 510 to MG9- 619 inc.

The following extracts taken from NEMA motor and generator standards, Publication 41-64, for alternating current motors are given as an indication of the more pertinent items to be considered in determining whether or not a given motor as applied meets the requirements: applied meets the requirements:

#### PERFORMANCE STANDARDS

Note ii—See MG4-10 for descriptive specification covering Class A and Class of insulation.

Note iii—All temperature measurements by thermometer method.

Note iii—All temperature rises are based on an ambient temperature of 40 C. General guarantees do not apply and deterioration of insulation may be expected, if this ambient temperature is exceeded in regular operation.

Note v—See MG4-11 for descriptive specification of temperature rating.

Note vi—See MG3-25.

Note vii—The Underwriters' Laboratories, Inc. approves certain motor-driven appliances under a definite duty cycle and under such conditions permit the motor to have a 65 C. temperature rise in a 24 C. ambient.

Adopted Standard (Maximum Limit) 2-19-1942.

\*MG8-101 Minimum efficiencies, power factors and apparent efficiencies.

The efficiency, power factor and apparent efficiency of the following ratings shall not be less than the values given below at rated voltage, Fixedle PMASE.

# 2, 4, 6, AND 8 POLE, 60-CYCLE MOTORS, SINGLE-PHASE (a) General-Purpose

Rating Hp.	3600	Per of Speed 1800		900	3600	Power Per Speed 1800	Factor Cent rpm. 1200	900				900
1/8 1/6 1/4 1/3 1/2 3/.	45 49 53 54 55 57	53 58 61 63 65 67	45 49 53 54 55	38 42 45 46 47 49	57 62 66 67 69 72	52 56 59 61 63 65	43 46 49 50 52 53	36 38 40 41 43 44	28 34 39 41 44 46	30 36 41 44 47 49	21 25 29 31 33 34	15 18 20 22 23 24

\*Note—The power factor and efficiency must not be less than the values shown and such that their product is not less than the values given for apparent efficiency.

#### Table 4—Liquid Shut-Off Valves\*

Horse Power	Type Unit	Unit Type		Receiver Connection†	Tube Size O.D.	Tube Connection	Single or Back Seat	Stem End
	Self			Male Pipe Thread		SAE flare or compression	Single seat	
1/5	Contained	soldered		1/4"	1/4"			1/4" Sq
	Remote \$ "		**	1/4"	. **	**	1/4" Sq	
1/4	Self /4 Contained ‡ "		**	1/4"		**	1/4" Sq	
	Remote	Remote \$ "		**	1/4"	**	44	1/4" Sq.
1/3	Self /3 Contained ‡ "		**	1/4"	44	**	1/4" Sq	
	Remote	#	**	**	1/4"	••	**	1/4" Sq
1/2	Self Contained	*	**		1/4"	**	**	1/4" Sq
	Remote	\$	**	**	1/4"	**	4+	1/4" Sq
3/4	Remote		4.6	3/4" .	3/8"	**	8.0	1/4" Sq
3/4	Remote		6.6	***	36"		84	1/4" Sq.
1/2	Remote		**	**	3/8"	SAE flare, com- pression or sweat	**	1/4" Sq
	Remote		4.6	* *	1/2" 1/2" 5/6"	**	44	1/4" Sq
	Remote		44	**	1/2"	8.0	**	1/4" Sq.
	Remote		6 0	1/2"	8/8"	4.4	4.0	1/4" Sq.

The manufacturer is at liberty to use standard compressor shut-off valves for liquid shut-off valves where

desired. TReceiver connection applies only to pipe thread valve connection at receiver. \$0°C Liquid Receiver Valve with ¼″ of ¾″ SAE male inlet from condenser to receiver and ¼″ SAE male Liquid Outlet Line Connection—¼″ O.D. Dip. Tube. Dip Tube. O.D. same as liquid Line O.D.

# Table 5-Suction Shut-Off Valves

Horse	Туре			Bolts		Tube	Tube	Single or	Gauge	Stem	
Power	Unit	Type	No. of	Size	Centers	Size O.D.	Connection	Back Seat	Outlet	End	
	Self Contained		2	5/16"   5/8"		3/8"	SAE flare, Compression or Sweat	Back Seat	1/8" Fe- male Pipe Thread	1/4" Sq.	
	Remote	0.0	2	5/16"	15/8"	3/8"	8.8	Back Seat	44	1/4" Sq.	
	Self Contained	**	2	5/16"	1 5/8"	3/8"	44	Back Seat	4.6	1/4" 80	
	Remote	8.0	2	5/16"	1 5/8"	3/8"	44	Back Seat	44	1/4" Sq.	
	Self Contained		2	5/16"	15/8"	3/8"	88	Back Seat	8.6	1/4" Sq.	
	Remote	**	2	5/16"	15/8"	3/8"	66	Back Seat	6.6	1/4" \$0.	
1/2	Self Contained	**	2	5/16"	1 5/8"	1/2"	44	Back Sent	64	1/4" Sq.	
3/4	Remote	0.0	2	5/16"	15/8"	5/8"	44	Back Seat	44	1/4" Sq.	
	Remote	0.0	2	5/16"	15/8"	5/8"	8.6	<b>Back Seat</b>	64	1/4" Sq.	
1/2	Remote	0.0	2	5/16"	15/8"	3/4"	Sweat	Back Seat	6.6	5/16" Sq	
2	Remote	0.0	2	5/16"	15/8"	3/4"	Sweat	Back Seat	44	5/16" Sq	
5	Remote	0.0	2 2 4	1/2"	2 3/4"	11/8"	Sweat	Back Seat	44	3/8" Sq.	
5	Remote	0.0	4	1/2"	2 1/2"	13/8"	Sweat	<b>Back Seat</b>	4.0	1/2" 50.	

# Table 6—Discharge Shut-Off Valves\*

Horse	Type			Bolts		Tube	Tube	Single cr	Outlet	End
Power	Unit	Type	No. of	Size	Centers	Size O.D.	Connection	Back Seat	Outlet	6.114
1/5	Self Contained	Flat Flange	2	5/16"	1 5/8"	3/8"	SAE flare, Compression or Sweat	Back Seat	1/8 Fe- male Pipe Thread	1/4" Sq.
	Remote	**	2	5/16"	1 5/8"	3/8"	8.0	Back Seat	44	1/4" \$0.
1/4	Self Contained	**	2	5/16"	1 5/8"	3/8"	. 44	Back Seat	**	1/4" \$4-
.,.	Remote	44	2	5/16"	1 5/8"	3/8"	66	Back Seat	* 9	1/4" 84
1/3	Self Contained		2	5/16"	1 5/8"	3/8"	44	Back Seat		: /4" \$0-
,	Remote	44	2	8/16"	15/8"	3/8"	6-9	Back Seat	**	1/4" \$4.
1/2	Self Contained	**	2	5/16"	1 5/8"	1/2"	44	Back Seat	**	1/4" \$4
	Remote		2	5/16"	1 5/8"	1/2"	8.6	Back Seat	**	1/4" \$4.
3/4	Remote	40	2	5/16"	1 5/8"	1/2"	64	Back Seat	8.0	1/4" 54
	Remote	44	2	5/16"	15/8"	5/8"	64	Back Seat	0.0	: /4" \$0-
1 1/2	Remote	0.0	2	5/16"	15/8"	5/8"		Back Seat	0.0	1/16" St
2	Remote	0.0	2	5/16"	1 5/8"	3/4"	Sweat	Back Seat	0.0	5 /16" St
3	Remote	0.0	2		1 5/8"	3/4"	Sweat	Back Seat Back Seat	+ =	3/8" 54
5	Remote		2	1/2"	2 3/4	11/8"	Sweat	DRCK SEAT		

Where two discharge valves are furnished, they shall be standard valves having equivalent or ereafer outlet

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Table 7—Receiver Shut-Off Valves Water Cooled Condensing Units\*

Horse Power		Type	Receiver Connection†	Tube Size O.D.	Tube Connection	Single or Back Seat	Stem End	
1/3		Angle (welded, brazed, soldered or forged)	Weld or 3/8" MPT\$	1/2"	SAE flare or eompression	Single Seat	1/4" Sq.	
1/2	Remote	44	Weld or 3/8" MPT‡	1/2"	4.6	Single Seat	1/4" Sq.	
	Remote	44	Weld or 3/8" MPT\$	1/2"	44	Single Seat	1/4" Sq.	
1	Remote	**	1/2" MPT	5/8"	SAE flare, compression or Sweat	Single Seat	1/4" Sq.	
1/2	Remote	44	1/2" MPT	5/8"	44	Single Seat	1/4" Sq.	
	Ecmote	44	3/4" MPT	3/4"	Sweat	Single Seat	5/16" Sq.	
	hamote	44	3/4" MPT	3/4"	Sweat	Single Seat	5/16" Sq.	
-	Femote	Straight Flat Flange	2 i/2" Boit 2 3/4" Boit Center	1 1/8"	Sweat	Back Seat	3/8" <b>S</b> q.	

\*The manufacturer is at liberty to use standard compressor shut-off valves for receiver shut-off valves where desired. If two receiver valves are furnished, they shall be standard valves of equivalent or greater outlet table area than specified. Placeiver connection applies only to pipe thread valve connection.

#### Table 8—Receiver Shut-Off Valves\* Air Cooled Condensing Units

		AII GO	oica com		Omits			
Horse Power	Type Unit			Receiver Tube Connection Size O.D.		Single or Back Seat	Stem End	
1/5	†Self Contained	Angle (Welded, brazed, soldered or forged)	1/4" male pipe thread	1/4"	SAE flare or compression	Single Seat	1/4" Sq	
	†Remote	44	44	1/4"	**	Single Seat	1/4" Sq	
1/4	†Self Contained	**	**	1/4"	**	Single Seat	1/4" Sq	
	†Remote	**	44	1/4"	**	Single Seat	1/4" Sq	
1/3	†Self Contained	44	••	1/4"	**	Single Seat	1/4" St	
.,	†Remote	44	44	1/4"	44	Single Seat	1/4" St	
1/2	†Self Contained	44	· &a	1/4"	44	Single Seat	1/4" Sq	
	†Remote	**	4.6	1/4"	**	Single Seat	1/4" Sq	
34	Remote	44	3/8"	3/8"	46	Single Seat	1/4" Sq	
	Remote	**	3/8"	3/8" 3/8"	44	Single Seat Single Seat	1/4" Sq 1/4" Sq	
1/2	Remote	48	3/8"	1/2"	0.0	Single Seat	1/4" Sq	
1/2	Remote	"	1/2"	5/8"	SAE flare, compression or sweat	Single Seat	1/4" Sq	

The manufacturer is at liberty to use standard compressor shut-off valves for receiver shut-off valves where desired. †When a combination liquid receiver-liquid line shut-off valve is used as shown in note† on Table 4 or a standard liquid line shut-off valve is used, this receiver shut-off valve is not required.

General Electric Profit

Down From '41 Figure

SCHENECTADY, N. Y. - General

Electric Co.'s profit available for

dividends for the first half of this

year amounted to \$20,681,433 or 72

cents a share of common stock, as

compared with \$26,003,665 or 90 cents

a share for the same period last year.

These profit figures were after pro-

vision for federal taxes on income and

for contingencies amounting to \$94,-

000,000 in the 1942 period and

\$52,000,000 in the 1941 period, an in-

crease of 81%. Before provision for

federal taxes on income and for

contingencies, the company's total in-

come in the first six months was

\$114,681,433 or 47% more than in the

Net sales billed during the first

half of this year amounted to

\$412,383,825 compared with \$300,332,085

for the first six months of last year,

dehydrated. Careless or thoughtless installation methods may nullify all the care, expense and planning that went into the building of this unit. A careful and efficient installation will enable it to give

corresponding period a year ago.

a decrease of 21%.

# Commercial Standard Incorporates Data For Installer and User

(Concluded from Page 10, Column 3) material and workmanship for a maximum period of 90 days from date of installation.

20. Guarantee of compliance. In order that purchasers of refrigeration units may be assured that these units comply with the requirements of this standard as a basis, for fair competition, it is recommended that the following staterecommended that the following statement be included in manufacturers' and/or distributors' warranties, labels, invoices, contracts, sales literature, etc.: "The (manufacturer or distributor) guarantees that this refrigeration unit complies with all requirements of Commercial Standards CS....-..., as issued by the National Bureau of Standards of the United States Department of Commerce."

# Installation and Service

Instructions

Electrical Specifications

Line Protection

Compressor Rotation

Compressor Lubrication

Leak Test

Expansion Valve Adjustment

Refrigerant Requirements

Installation Recheck

Sq.

Sq.

Sq.

Strainer

Cleaning Evaporator Lines

Drying Evaporator Lines

Remove Moisture-Laden Air

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21. It is recommended that a copy of the following "Installation and Service Instructions" shall be furnished with each refrigeration unit.

# Check List—Instructions

Be sure to study these important

IMPORTANT: This unit is constructed of high grade materials, built by modern precision methods, every part carefully gauged and inspected, and the entire unit tested. When it left the factory, it was free of factory matter, and the propulsh. free of foreign matter and thoroughly

the years of satisfactory use for which it was designed. IT IS NOW UP TO YOU, THE INSTALLER. Place unit where it has a free circulation of cool air. If a water-cooled unit, do not install where it will be subjected to freezing temperatures.

Lubricate motor bearings before starting this unit. Use only lubricant of the grade recommended by the motor manufacturer.

an increase of 37%.

Check name plate on motor and controls to be certain that unit is being connected to correct current.

Use line fuses of proper rating (See National Electrical Code.)  $\,$ 

Make certain that pulleys are in alignment and that belt is adjusted to proper tension. Check direction of rotation of compressor as indicated by arrow on unit.

Be sure evaporator and lines are dry and clean. If they have stood open, blow out with  ${\rm CO}_2$  and bake dry. The use of a suction or liquid line strainer for protection of the system is recommended.

Use only suction or liquid line dryers to remove moisture. Use dryers which have been recommended by the compressor-unit manufacturers.

Draw a deep no-bubble vacuum on the entire system before charging with refrigerant, using a vacuum pump designed for that purpose.

Check the compressor oil level after unit has operated a few hours, and add oil as required to make up for that in the lines and evaporator. Use only clean, dry oil in sealed cans approved by the manufacturer of this unit.

Test all joints for leaks. Use a good Halide torch leak-detector for methyl chloride and FREON and a strong ammonia swab for sulphur dioxide.

Check adjustment of expansion valve and reset if necessary to keep liquid refrigerant from returning to the compressor. Be sure to use the proper size valve.

Use only refrigerant specified on unit name plate that is clean and dry. If refrigerant is changed on approval of the unit manufacturer, remove old refrigerant and compressor oil, put in new approved oil, and pump a deep vacuum before charging with new refrigerant.

Before leaving the installation as complete, recheck temperature, valve settings and general operation, always using gauges. See that service valve caps, control covers and other loose parts are in place. Also recheck pressures, compressor oil level, and the motor oil.

User Instructions Instruct the customer or user in the care and operation of this unit; how to oil motor and replace fuses. Leave your name, address and telephone numbers, day and night, posted near the unit.

# Relief Available For Firms with 'Too Low' Has Year 'Round System Says Housing Official **Prices Set In March**

WASHINGTON, D. C .- A means for ready adjustment of ceiling prices by retailers, wholesalers, and manufacturers who are suffering hardships under the General Maximum Price Regulation because their March prices were abnormally low has been provided by the Office of Price Administration.

With an amendment to the general regulation, the OPA specified that prices may be changed under these conditions:

1. Any seller, other than a retailer, whose maximum prices for a commodity is based on a special or other price reduction limited to four months, may increase his maximum to the highest price at which he delivered the commodity during the 30 days immediately preceding the temporary reduction.

2. A retailer whose maximum price for a commodity is reduced as a result of a special deal which his supplier made available to him may raise his maximum to the highest price at which he delivered the commodity during the 30 days immediately preceding the temporary reduction.

A retailer whose temporary reduction was not based on a special deal provided by his supplier may apply to OPA under Section 18 (a) of the General Maximum Price Regulation for adjustment of his maximum & price if his ceiling is abnormally low in relation to his competitors and is

causing him substantial hardship.
"Special deal," as used in the amendment, includes any temporary reduction, that is, one limited to four months, in the price charged to purchasers of the same class.

As a check on action taken by sellers, the amendment requires the seller to report any adjustment made by him within 10 days to OPA, showing that the adjustment is within the limitations prescribed in the amendment. OPA reserves to alter the adjusted price at any time.

"As every one knows, the over-all price regulation was intended to place a ceiling on the general level of prices," Price Administrator Leon Henderson said.

"Now we are taking a logical step under this policy of smoothing out the rough spots and permitting certain sellers whose prices are obviously below those of their competitors and are inevitably causing hardships to make immediate adjustments and then report their action to us for review.

"This step holds the general level of prices unchanged while at the same time providing quick relief for out-of-line cases."

Sellers who use the adjustment to adjust their ceiling prices must submit justification of the price change to the local OPA office, or if sales of the article involved are made in more than one region, then to OPA headquarters here.

# **Question and Answer** Session Held on Prices **For Appliance Dealers**

NEW YORK CITY-Questions and answer session on "price ceilings" as they affect the merchandise of electrical appliance dealers was held recently here, with local OPA officials doing the "answering." Some of the questions and their answers are as

Q. Are prices of washers and radios controlled? A. Yes, under the General Maximum Price Regulation. Before the General

Regulation went into effect, prices had been covered by special regulations, now withdrawn. Q. Are service prices to be filed with

the government agency? Yes, on or before Sept. 10.

Q. Is the seller's maximum price the price at which the seller took an order in March or the price at which he delivered goods in March? A. The seller's maximum price in

such case is the highest price which the seller charged for a commodity delivered in March. Q. May a store which sold radios at full price on time payments, and then at a discount for cash, establish the

full price as the maximum price? A. No. The merchant has two ceiling prices; one for cash, and the other

for the instalment buyer.

# New War Dept. Building Home Repairs 'Vital'

ARLINGTON, Va.-The new War Department building here will be completely air conditioned, with one of the main features of the installation being the complete and in many cases, unusual use of Minneapolis-Honeywell pneumatic equipment.

The building's periphery of one mile is made up of five sides, each 1/4 of a mile in length. Each section is built separately and occupied as soon as finished. The first section is now completed, the others will be ready some time this summer and next fall.

The air conditioning systems cool, circulate, and filter the air in the summer; circulate and filter in the heating months. Heat is supplied by window radiators circulating hot water.

Temperature of the hot water is determined by the intensity of the sun, which is measured by equipment furnished by Minneapolis-Honeywell.

Charles S. Leopold, Philadelphia, is the consulting engineer; Mehring & Hanson, Chicago, and Baker Smith & Co., Inc., New York, are the heating and ventilating contractors.

# Argentine Meat Packers Turn To Quick Freezing

ARGENTINA-Experiments in the exportation of quick-frozen meats are expected to lead to the change-over to this method by two Argentine meat export firms, according to Argentine Information Bureau.

WASHINGTON, D. C., July 18 .-Essential repairs and maintenance are vital to the preservation of American home properties in sound, livable conditions during wartime, Federal Housing Commissioner Abner H. Ferguson declared today.

Because of the urgent need for conserving critical war material, new home construction has been sharply curtailed and the war housing projects now being built are of necessity reserved to meet the needs of the most essential war industry workers, Mr. Ferguson said.

"This condition makes it all the more imperative that our supply of existing houses be kept in adequate repair, conforming to decent standards of sanitation and health," the Commissioner asserted. "For the great majority of American families, these existing houses will represent the only housing available for the duration of the war."

# Celotex Corp. Opens **New General Offices**

CHICAGO-New general offices of the Celotex Corp., insulation manufacturer, have been recently opened in the South LaSalle building.

The entire twenty-first floor, most of the twentieth floor, and a section of the eighteenth floor of the South LaSalle building will be used by the corporation.



# OUR FIGHTING FORCES!

Put "Young America" in his fighting togs...feed him "three squares"... and you have the makings of an army that is second to none. There is no denying that an army marches and fights on its stomachthat good, wholesome food is a first essential for Victory. The dependability of UNIVERSAL COOLER REFRIGERATION UNITS installed in nationally known refrigeration plants has resulted in their being used generously at home and abroad—by the Navy, Army and Marine Corps—to protect the food of "Young America"—to safeguard his health—to keep him in fighting trim.

Universal Cooler Corporation, Marion, Ohio, U. S. A.



AUTOMATIC REFRIGERATION SINCE Universal Cooler of Canada Ltd., Brantford, Ontario

# What to Check When Electric **Motor Does Not Start**

# **Motor Troubles &** Their Correction

Editor's Note: Following is part of a section on servicing motors, in a series of articles on motor construction and operation.

By R. A. Fuller, Industrial Engineering Dept., General Electric Co.

# Complaint - -

# G. High Electric Power Bills

(See also other complaint causesparticularly those in Section A "Motor Overheats" and Section B "Motor Does Not Start.")

Where the cause of the high power cost is excessive load, see Section A 3.

High electric power bills must be recognized as bills that the power company has rendered to its customer. It is therefore desirable that criticism of the electric power service to a customer be avoided. Discussion of the particular problem with the power company engineers, when their service is in question, will give the service man their assistance and will usually lead to the most effective correction of the condition.

On large equipment, the power rates may be determined by several factors in addition to the amount of power used. The total amount of load connected, the maximum load (demand) during a given period, and the power factor, (the efficiency with which the current is drawn from the line) may, for example, be of considerable importance in the rates for a large air conditioning installation.

# 1. Underloaded Motor

"Underloaded motor" is one that is operating at appreciably less than its full load rating. As a motor is usually designed to be most efficient

DIAPHRAGM PACKLESS VALVES

CHECK VALVES

**DEHYDRATORS** 

100

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SAVE

FOR

REFERENCE

Superior PRODUCTS \* \* \*

\* \* \* FOR YOUR Defense JOBS

creased refrigerated space for the accelerated production of perishable foods places a heavy responsibility from the refrigeration industry. Shortage of metals condemns waste and inefficiency. Do your part to control materials. Design to produce more refrigeration per watt hour. Select equipment which requires a infimum of service. Specify SUPERIOR—the quality buy-word of the industry.

\* Refrigeration is Vitally Essential to Our National Defense Efforts \*

\* Refrigeration-Food Preservation and National Defense are Synonomous \*

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For complete details—see your Jobber or write for catalog

SUPERIOR VALVE & FITTINGS CO.

\* PITTSBURGH \* PENNSYLVANIA

at approximately full load, the use of the motor at light loads usually results in somewhat inefficient operation. Unless there is special reason for it, it is, therefore, undesirable to apply, for example, a 3-hp. unit on a 2-hp. job.

A lightly loaded motor is not only low in efficiency, but it also is low in power factor so that, where power factor enters into the power rates, an added penalty in operating cost is introduced.

#### 2. High Running Time

"High running time" may be caused by a number of things, among which are:

a-Excessive load (See Section A on "Overload Trips Out or Motor Overheats").

b-Leaky or broken discharge valve in the compressor.

c-Faulty setting or operation of the back pressure control.

d-Slow speed of the compressor due to slipping of the belts, low voltage, or the use of the wrong size of motor pulley. e-Excessive pressure drop in the

refrigerant lines due to their length, small size, or restrictions in them. f-Incorrect size of evaporator or

condensing unit for the application. g-Gradual failure of the cabinet insulation by moisture getting into it or by settling of the insulation in

#### 3. High Voltage

"High voltage" may occasionally cause high power bills. This condition may occur more frequently in the outlying districts, on household refrigerators, than in the downtown areas on commercial installations. The advice and assistance of the power company engineers may be very helpful in determining whether or not high voltage conditions exist and in satisfying the customer.

# H. Noise

#### 1. Miscellaneous Loose Parts

"Miscellaneous loose parts" are

PACKED AND PRESSURE CUP VALVES

LIQUID INDICATORS

without seal cap. Flare sizes ½" to ½", Sweat to 1½". On ½" Sweat to 1½" entire upper may be removed as a unit to facilitate soldering sant lines to consecution.

FLARE NUTS

common causes for noise complaints particularly on household units and similar packaged equipment. Failure to remove the shipping bolts and blocking, so that the compressor unit does not float on its springs, may cause a noise complaint. A loose motor mounting bolt may rattle or allow the motor base to vibrate against the unit base.

Inspection tags and instruction books left in the unit compartment may flutter in the air from the fan and cause peculiar noises. A loose nameplate or conduit box cover may give trouble. A loose motor pulley may rock back and forth, pivoting on the setscrew, as it rotates. The fabric on the back of an old belt may become loose and slap on a tubing connection or some other part.

#### 2. Motor End Bump Noises

"Motor end bump noise" is very seldom experienced with the smaller motors which, in modern designs, are generally equipped with cushioning devices to prevent such noise. Many motors above 3 hp., and some smaller ones, may not be equipped with the end bump suppressors.

This noise is only experienced on sleeve bearing motors. It is caused by the bumping of the shoulder on the shaft against the inner end of the motor bearing. This, in turn, is caused by endwise forces on the rotor, due to the skewing of the rotor slots, in combination with the pulsating load of the compressor.

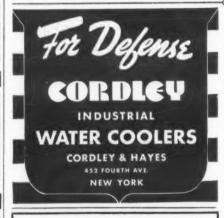
Contributing factors are misalignment of the motor and compressor pulleys, misalignment of the motor shaft with relation to the compressor shaft, irregularities in the Vbelts, wobbling of the condensing unit when it is mounted on resilient supports, and resilience in the base of the condensing unit itself.

To check definitely that the noise is due to end bump, press on the end of the motor shaft with the motor running. If the noise disappears while this is done, and occurs again when the pressure is removed, it is pretty definite evidence that the trouble is due to end bump. The point of a pencil, or nail, inserted in the center hole in the end of the shaft is a convenient way of exerting this pressure.

In some cases, pressure on the pulley end of the shaft may not be effective or convenient. A cap is usually provided, over the other end of the shaft, which can be removed for making this check. This test should be made carefully to avoid personal injury from the belts and

Slight changes in the alignment of the pulleys, and in the alignment of the motor shaft with relation to the compressor shaft, may be very effective in eliminating end bump noise.

Washers can be added, on the shaft between the shaft shoulder and the inner end of the bearing, to reduce the end play and thus reduce the hammer blow effect. Thin phosphor bronze washers should be used with an equal number on each end of the shaft to preserve the



# AMINCO OIL SEPARATORS 1-3 h. p. to 120 Tons

American Injector Company 1481 14th Avenue, Detroit, Mich.



centering of the rotor in the stator. Some end play should be left in the motor to prevent binding when the motor heats up and the shaft expands.

A washer of tough, resilient, oilresistant material, such as steam packing approximately 1/16 inch thick, may be very helpful in cushioning out the noise. Such a washer should always be placed between two metal washers so that it is not subjected to wear.

It is obvious that if the shaft shoulder never touches the inner end of the bearing there will be no end bump noise. Thus if the motor end play can be increased sufficiently, the noise can be eliminated. A considerable number of motors have been used successfully in this way where it was possible to obtain approximately % inch end play on motors of 20 hp. and larger, and approximately 1/4 inch in the smaller integral horsepower ratings.

Such increases in end play can be obtained by removing any end play washers which may already be in the motor and by cutting back the shaft shoulders in a lathe. An equal amount should be removed from both ends of the shaft to preserve the centering of the rotor in the stator.

Care should be exercised to insure that too much end play is avoided. Too much end play may cause interference between the rotor fan blades and the shrouds on the inner sides of the end shields, interference between brushes and parts of the commutator, or permit the shaft shoulder to throw oil around inside the motor. Do not attempt to increase the end play of a capacitor as this may seriously affect the operation of the centrifugal switch.

Ball bearing motors have essentially no end play and do not have end bump noise. These can be used in place of sleeve bearing motors to avoid the noise. However, it should be noted that ball bearing motors are usually more expensive and noisier in other respects.

#### 3. Brush Noise

"Brush noise" is present in all motors in which the brushes rest on the commutator while the motor is running. If the commutator is worn, the mica between the bars may project slightly above the surface of the commutator and cause chattering of the brushes. This can be corrected by scraping the mica down until its outermost edge is slightly below the commutator surface. It may also be helpful to turn down, or sand, the commutator in addition to this undercutting of the

A hard brush tends to wear longer, to wear the commutator faster, to keep the mica from protruding, and to be more noisy than a softer brush. A softer brush may sometimes be helpful in reducing noise but such a change may introduce more frequent brush replacement than is permissible.

A brush may chatter in the brush holder, if it is loose, although too tight a fit may cause the brush to bind in the holder. It is sometimes possible to modify the action of the brush spring slightly so that there is a slight tendency for the brush to be held over against the side of the brush holder toward which the rotation of the commutator tends to push it. On some fractional horsepower motors this treatment has been very effective. When this is done it may be necessary to sand the brushes as the brush fit to the commutator may be disturbed.

A solution, sometimes overlooked, is to change the motor location or introduce sound insulation so that the noise does not reach the person who has been disturbed by it.

# 4. Motor Bearings Need Lubrication and Worn Motor Bearings

"Motor bearings need lubrication and worn motor bearings" can cause a rumbling noise. The trouble can be easily checked by noting the oil level in the oil filler gauge or by noting a definite and immediate decrease in the noise when oil is added. If a regular maintenance program has been followed it is possible that some bearing trouble has developed such as a worn bearing or oil leaking from the bearing. A worn bearing can sometimes be temporarily kept in service by using a higher viscosity (heavier) oil. The discussion of "Bearings" in an earlier section may prove helpful if such emergency operation is con-

# Forslund, Wickham Join Midwest Jobber Group

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DES MOINES, Iowa - Forslund Pump & Machinery Co., Kansas City. Mo., and the Wickham Supply Co., Lincoln, Neb. were taken into the membership of the Midwest Refrig. eration Supply Jobbers Association at a meeting of the group held June 22 here.

Highlight of the meeting was the discussion by several attending manufacturers' representatives of solving priority and limitation order problems within their own companies, Fred B. Hovey, executive secretary of N.R.S.J.A., attended the session

# Frozen Food Locker Plant Opens In Ocala, Fla.

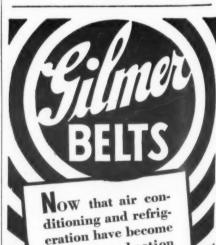
OCALA, Fla.-One of the first frozen food plants in Florida has been opened here under the title of "Your Frozen Food Locker Service," at 9 East Ocklawaha Ave., by C. C. Williams. Gene Pender, with 12 years experience with frozen lockers, will be in charge.

Frozen food products and native and western meats will be sold in the retail department.



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# 'Concentration' Plan Would Put All Civilian Production In Few Plants

(Concluded from Page 1, Column 1) These orders, which could be drafted and applied quickly, were necessary as a first step, have resulted in large savings of critical materials and have facilitated conversion to war production.

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The war program has now reached a stage, however, in which the imposition of straight percentage cuts on all firms does not provide for the most effective use of the nation's resources. Consequently, Mr. Nelson said, the Board has decided that wherever possible a policy of selective limitation be applied, with essential civilian production concentrated in certain plants and regions.

In adopting this policy, the Board held that there is a strong prima facie case for concentrating the production of civilian goods wherever one or more of the following conditions are found in a civilian industry:

1. Some or all firms in the industry are needed for war production and can be converted to such production.

2. Permitted civilian production is so restricted that economic operation of all firms in the industry is not possible.

3. A significant part of the production is continuing in areas where there are bottlenecks in labor, transport, power, or warehouse facilities. It is the belief of the Board that one or more of these conditions applies to a very large part of civilian industry, and it was agreed that a study should be made at once of the effect upon industry of the curtailment and limitation orders thus far issued.

No hard-and-fast rules can be laid down, Mr. Nelson said, to govern the selection of "nucleus plants"i.e., plants which will be allowed to continue operation at or near ca-In general, however, he pacity. said, the following criteria will guide WPB officials in such selections:

1. As a rule, though not invariably, small plants will be kept in civilian production, and large plants, which are usually better equipped to handle war contracts, will be required to suspend civilian production.

2. Civilian production should be suspended in areas where labor is urgently needed in war plants, and nucleus status should be given wherever possible to plants in areas where there is still a surplus of labor-as, for example, in New York City, and in many rural communities.

3. Nucleus firms should be selected so that cross-hauling is eliminated wherever possible and the drain on transportation facilities is reduced.

4. Production should be suspended or restricted in regions where the power supply is or is likely to become inadequate.

5. As a general rule, nucleus plants should not be located in areas warehouse accommodations

are short.

Mr. Nelson said the Board fully realizes that concentration of civilian production raises many difficult problems-compensation to closeddown firms, maintenance of trademarks, rearrangement of distributive channels, and so on. But while these are of great importance to the individual firms involved, he said, from the standpoint of war production they are secondary to the need for determining the degree of curtailment, concentrating production and converting non-nucleus firms to war work. In working out concentration plans, he said, the Board feels that these principles should be applied:

1. Concentration plans should not foster post-war domination of an industry by one or a few companies. In other words, a plan which will make possible the re-entry of the largest number of firms into the industry after the war should be given preference, so long as it is consistent with efficient prosecution of the war.

2. Wherever possible, concentration plans should be accompanied by standardization and simplification of the product.

3. Concentration programs should be drafted for limited periodswith one year, probably, as a maximum-and should be flexible enough so that they can be revised if circumstances change.

4. A concentration program for any industry should be coordinated with any program which the Office of Price Administration may work out for concentration of the distributive channels of that industry.

5. Where compensation is pro-

vided for firms closed down, it should be paid by the firms which continue operations and should be limited to the duration of the concentration program. This would presumably include either an agency scheme, under which nucleus firms produce at cost for closed-down firms which retain their sales organization, or a pooling scheme which concentrates both production and distribution in the nucleus firms.

Mr. Nelson said that the board realized that concentration raised such problems as compensation, maintenance of trademarks, and rearrangement of distributive channels. But active prosecution of the program, he though, together with the activities of the Smaller War Plants Corp., would render a great deal of assistance to a segment of the industrial economy which had been unable to find a place in the War effort.

# Luce Heads Seattle Offices of WPB

WASHINGTON, D. C .- Milton H. Luce is new acting deputy director for the Seattle district of Region 10 of the WPB. Mr. Luce will supervise the activities of all WPB field offices in the states of Washington, Oregon, and Idaho.

The Seattle district will be completely staffed with experts and technicians in all phases of WPB activities. While Seattle will continue to operate out of Region 10 for the purposes of administrative control, all matters pertaining to WPB policy and field operations in the northwestern area will be handled exclusively by Mr. Luce's office.

# Fernald Dead; Was **Industry Leader** Over 15 Years

(Concluded from Page 1, Column 4) American Air Conditioning Committee; member of the Advisory Committee R.F.C., and of the American Arbitration Assn.

Mr. Fernald was born in Newtonville, Mass., and educated at the Hawley School of Engineering. After a brief service with the Boston Elevated Railway Co., he was electrical superintendent of the Metz Motor Car Co. 1911-1915 when he went to Philadelphia as sales engineer for the V. V. Fittings Co.

In 1917-19 he served with the United States Army Engineer Corps. Following the war he became a sales engineer for the Cutler-Hammer Co.

He became associated with the Electric Refrigeration Corp., later the Kelvinator Corp., in Detroit in 1926, serving as assistant director of sales, and head of the commercial refrigeration division until 1932.

At that time he became general manager of the Baker Ice Machine Co., where he was credited with broadening the company's activities.

# Chenoweth Joins WPB

AKRON, Ohio-L. H. "Larry" Chenoweth, manager, manufacturers' sales, in the Industrial Products sales division of The B. F. Goodrich Co., has been granted a leave to serve on Rubber Products Division of WPB.

# GET IN ON THE CASH NOW!

# THERE'S STILL A FULL WEEK LEFT TO ENTER THE BIG PRIZE CONTEST

Yes, there's still time for you to win a substantial cash award in the big prize contest being sponsored by Air Conditioning & Refrigeration News-if you act promptly.

This is not a hard contest to win-and there's no limit to the number of prize winners in it. All you have to do to qualify as a contestant is to write an article, based on your own experience, on the subject "How I Sold Refrigeration Equipment on Priority to a War Factory," sending the story to the News.

If the story is interesting and informative (if you follow the rules the right it can hardly help being so), it will be published in the News and you will be paid 1c for every word printed. In addition, you will be eligible to win the extra \$50 cash prize for the best article submitted.

Take advantage of this grand opportunity today. Besides winning cash for yourself and publicity for your company, you will be helping the industry and the war effort, through publicizing new applications for refrigeration and air conditioning designed to speed war production. Why not write the article right now?

Don't worry about censorship! Include all the details you feel are essential to tell the whole story. Editors of Air Conditioning & Refrigeration News will censor the story and eliminate any information which should not be published.

Every Distributor, Dealer, Salesman Jobber and Serviceman Can Win Cash Prizes In This Contest Sponsored by the News

# Contest Rules

of Contest: "HOW I SOLD REFRIGERATION EQUIPMENT ON PRIORITY TO A WAR FACTORY"

Participants: Distributors, dealers, contractors, jobbers, servicemen and their salesmen are invited to participate in this

Dates: Contest began July 20 and ends Aug. 10, 1942.

Rules: Prizes will be given to participants whose articles on the subject "How I sold refrigeration equipment on priority to a war factory" are accepted for publication in AIR CONDITIONING & REFRIGERATION NEWS. Articles are to consist of 500 to 3,500 words telling how participant sold either food preservation or industrial processing refrigeration equipment to a war factory between Jan. 1, 1942 and Aug. 1, 1942.

Information to include in articles: Why and how you made contact with the factory to which equipment was you found the right man to talk to. How you uncovered their refrigeration problems. Complete description of equipment sold, including size of unit, fixtures, approximate overall cost, etc. If a job for materials processing (rivet coolers, oil coolers, metal storage, etc.), include information as to the savings in time or money, or increase in production resulting from the installation. If the job required special detailed layouts, describe your design and layout. Include size of plant and type of war work performed. Necessary censorship will be done by NEWS editors before publication.

Prizes: 1¢ per word for article as published; \$2 per published photo. \$50 cash prize to writer of best article, judged on interest of article and application, detail given in story.

Winner's names will be announced and best articles published in Aug. 31, 1942 issue of AIR CONDITIONING & REFRIGERATION NEWS.

Judges: Articles will be judged by a board of three members of the editorial staff of AIR CONDITIONING & REFRIGERATION NEWS. Judges' decisions will be final. All articles become the property of AIR CONDITIONING & REFRIGERATION NEWS and manuscripts will not be returned unless specifically requested.

Mail articles to Managing Editor, AIR CONDITIONING & REFRIGERATION NEWS, 5229 Cass Ave., Detroit, Mich.

# IME IS SHORT—START NOW

CONTEST CLOSES AUGUST 10

PATENTS

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#### Dorex Publishes Folders on 'Kno-Draft' Air Diffusers

NEW YORK CITY-Dorex division, W. B. Connor Engineering Corp., has issued two new folders on "Kno-Draft" air diffusers.

Bulletin WF-13 discusses the new "W-A-R" model F high velocity ceiling type air diffuser. This is a re-design of the standard diffuser now in wide use. It retains all the features of the original.

Bulletin D-15 brings news of type "DEE" volume damper for application to all Dorex high velocity ceiling type air diffusers. This new damper complements the function of the air diffuser.

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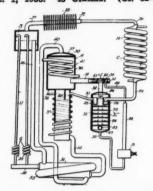
right, priced right. Write Tyler Fixture Corporation,

Dept. A-1, Niles, Michigan.

# Weeks of June 30

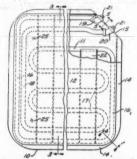
And July 7

2,287,855. METHOD OF AND APPARATUS FOR PRODUCING REFRIGERA-TION. Earl Babcock, Chicago, Ill., as-signor to The Hoover Co., North Canton, Ohio, a corporation of Ohio. Application May 21, 1930. Serial No. 454,216. Renewed Sept. 1, 1933. 43 Claims. (Cl. 62—119.5.)



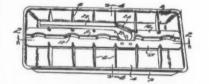
1. In an absorption refrigerating system, an evaporator, an absorber, conduits connecting said evaporator and absorber and adapted to convey an auxiliary pressure equalizing fluid there-between and means for removing liquid from said evaporator, means for changing the liquid so removed to a vapor and means for causing the vapor so formed to produce circulation of said auxiliary agent through said absorber, evaporator and conduits.

REFRIGERATION APPA-2,287,941. 2,287,941. REFIGURATION
RATUS. Orton S. McGuffey, Lansing,
Mich., assignor to Kold-Hold Mfg. Co.,
Lansing, Mich., a corporation of Michigan. Application May 31, 1940. Serial gan. Application May 31, 1940. S. No. 338,178. 4 Claims. (Cl. 62—95.)



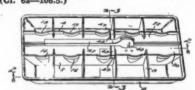
A hold over refrigeration unit including, in combination, a sealed sheet metal tank having closely spaced opposed side walls of relatively large area, the interior of said tank being free from abrupt corners and being substantially filled with a liquid hold over solution, and means for freezing said hold over solu-tion progressively from the perimeter of the tank toward the center thereof comprising an elongated evaporator tube disposed within the tank in spaced relation to said side walls and having inlet and outlet ends communicating with the exterior of the tank, said evaporator exterior of the tank, said evaporator tube including a first portion extending substantially around the perimeter of the tank in closely spaced relation thereto and other portions distributed substantially uniformly throughout the remainder of the tank, the first portion being arranged to receive refrigerant before said other portions and the minimum distance between the said first portion distance between the said first portion of the tube and the adjacent walls of the tank being substantially less than the maximum distance between any other portion of the tube and the walls of the tank adjacent thereto.

2,287,971. ICE TRAY. Clifford R. Carney, Dearborn, Mich. Application Nov. 9, 1940, Serial No. 364,979. 8 Claims.



1. An ice tray grid comprising a plurality of substantially vertically disp transversely extending separator members, a longitudinal separator member mounted on the transverse separator members and movable from a substantially vertical movable from a substantially vertical normal ice forming position to an angularly inclined ice releasing position, and means comprising oppositely movable longitudinally extending bars associated with the longitudinal members whereby longitudinal movement of the bars in opposite directions moves the longitudinal opposite directions moves the longitudinal separator member angularly from said normal substantially vertical position to release ice.

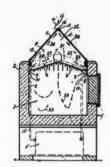
2,287,972. ICE TRAY. Clifford B. Carney, Dearborn, Mich. Application Nov. 12, 1940, Serial No. 365,140. 13 Claims. (Cl. 62—108.5.)



An ice tray grid comprising a plurality of spaced longitudinal separator members having substantially vertically disposed slots, a plurality of transverse separator members mounted in said slots, a pair of longitudinally extending actu-ating bars interposed between the longitudinal separator members, camming means between said bars and longitudinal separator members, and motion trans-mitting means associated with said actuating bars to move the bars in

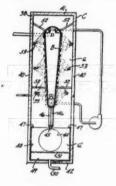
opposite directions to actuate the camming means and move the longitudinal separator members angularly to release ice.

2,287,997. REFRIGERATED SHOW-CASE. Edwin W. Jarvis, Los Angeles, Calif., assignor to Kold-Kist, Inc., Los Angeles, Calif., a corporation of California. Application Peb. 3, 1941, Serial No. 377,126. 6 Claims. (Cl. 62—89.5.)



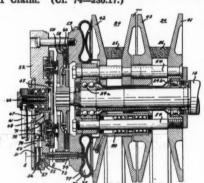
1. In a refrigerated display case, the combination of a display rack, transparent members disposed over the display rack, refrigerating means disposed below the display rack, the display rack being positioned in the case to provide an air passage at its edge adjacent the inner wall of the case, the transparent members being inclined upwardly over said dis-play rack, and means for heating the air adjacent the lower position of the trans-parent members so that heated air flows upwardly along the inner surface of the transparent members.

AIR CONDITIONING AP-2,288,003. PARATUS. PARATUS. George M. Kleucker, St. Louis, Mo., assignor to Midwest Coolers, Inc., St. Louis, Mo., a corporation of Missouri. Application June 12, 1939, Serial No. 278,607. 6 Claims. (Cl. 62—133.)



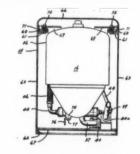
1. Air conditioning apparatus comprising a chamber-providing structure having upper and lower competituents, a heat exchanger in the upper compartment, means associated with said heat exchanger for forming a coating of ice thereon, means in the lower compartment for receiving and holding the ice upon removal from the heat exchanger, and means for passing air through the lower compart-

2,288,114. REFRIGERATING APPARA-TUS. Harry F. Smith, Lexington, Ohio, assignor to General Motors Corp., Dayton, Ohio, a corporation of Delaware. Application Nov. 25, 1938, Serial No. 242,212. 1 Claim. (Cl. 74



A variable ratio drive including a driver member, a driven member, means whereby said driver member drives said driven member, means for varying the speed of said driven member with respect to the speed of said driver member, pneumatic means for controlling said last named means, means for supplying fluid under pressure to said pneumatic means, a radially extending bore in one of said members a plunger slidably mounted in said bore and adapted to slide outwardly in response to centrifugal force, spring means biasing said plunger inwardly, and means whereby movement of said plunger in said bore varies the operation of said pneumatic means so as to vary the speed of said driven member.

2,288,166. REFRIGERATING APPARA-TUS. Andrew A. Kucher, Oakwood, Ohio, assignor to General Motors Corp., Dayton, Ohio, a corporation of Delaware. Application Dec. 23, 1940, Serial No. 371,241. 9 Claims. (Cl. 62—116.)



7. A refrigerating apparatus comprising in combination, a portable cabinet having a horizontally disposed frame at the top thereof and a horizontally disposed frame at the bottom thereof, side walls secured to said frames to form a com-partment, a refrigerant compressing and liquefying unit enclosed by said side walls and having provisions for connect-ing same with refrigerant conduits adapted to communicate with an evaporator located exteriorly of said cabinet, said unit including a motor, a compressor and a condenser enclosed in a sealed casing, and said casing being suspended from said frame at the top of said cabinet out supported within said compartment. and supported within said compartment above the frame at the bottom of said cabinet solely by said side walls.

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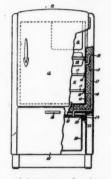
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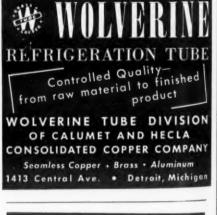
2,288,285. DEHYDRATOR. James L Rnight, Eric, Pa., assignor to General Electric Co., a corporation of New York Application April 12, 1941, Serial No. 388,281. 9 Claims. (Cl. 62—89.)



1. In a refrigerator having a refrigerated compartment and a cooling element disposed therein, a substantially air-tight receptacle associated with said refrigerator cabinet, and means com-municating between the interior of the compartment and the interior of the receptacle for permitting the passage of water vapor from the receptacle to the refrigerated compartment, said means being constructed and arranged in such a manner as to prevent the collection therein of moisture dripping from said cooling element, the walls of said com-partment, or articles stored in the com-partment.

(Concluded on Page 15, Column 1)







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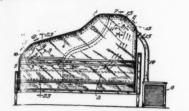
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(Concluded from Page 14, Column 5)
2,288,538. AIR CONDITIONED RECEPTACLE. Willard L. Morrison, Lake Forest, Ill. Application March 5, 1934, Serial No. 713,991. Renewed Oct. 26, 1938. 7 Claims. (Cl. 98—1.)



1. An air conditioned receptacle comprising an enclosing device of a length horizontally longer than a normal human being and into which said human being is received, so as to be entirely enclosed by said receptacle, an air duct entering the receptacle at one end thereof and extending along the top of said receptacle above the space occupied by the human being to the other end of said receptacle



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DOLE

COOLING & FREEZING UNITS

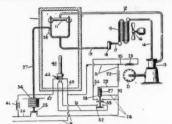




MOTORS for every
AIR-CONDITIONING AND
REFRIGERATION REQUIREMENT
WILLE FOR FREE DESCRIPTIVE BULLETINS
WARNET Electric Corporation
640 Plenauth Avenue, Sand James, Mo. U.S.A.

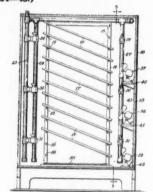
and having a discharge opening at said other end, an air straining chamber at the end of said duct being larger than the duct and acting to retard the movement of the air and cause said air to spread laterally, so that it occupies a wider area than the duct, and means at the end of the enclosing device where said duct enters it, for withdrawing air from said enclosing device.

2,288,587. REFRIGERATION Milton Kalischer, Longmeadow, Mass., assignor to Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., a corporation of Pennsylvania. Application Dec. 24, 1940, Serial No. 371,601. 6 Claims. (Cl. 62—89.)



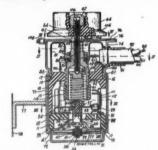
1. In a mechanical refrigerator, the combination of an insulated chamber, a cooling unit therefor, a mechanism for supplying refrigerant to said cooling unit, said mechanism including a motor requiring a high starting current, a control device for starting and stopping said motor, a sterilizing lamp in said chamber, said sterilizing lamp having a starting device, and means responsive to the high starting current of the motor for actuating the starting device.

2,288,616. DEHYDRATION APPARATUS. Berthold G. Freund, Astoria, N. Y., assignor of one-half to Harold A. White, Wantagh, N. Y. Application Feb. 11, 1939, Serial No. 255,960. 7 Claims. (Cl. 34—48.)



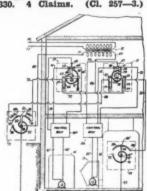
4. Apparatus for dehydrating food products, comprising a container affording a closed treating chamber, vacuum-producing means and a plurality of pipes communicating therewith and extending into the interior of the chamber, together with a plurality of shut-off valves located along the pipes with intake openings to said chamber at different levels, a plurality of supports within the chamber for receiving food to be dried, thermostatically controlled electrical heating means mounted at the bottom of the chamber, a plurality of brackets slidably disposed for displacement vertically along a side wall of the chamber and means to secure a bracket in adjusted position together with fans carried by the respective brackets for circulating heated gaseous medium therein and directing the same over the food products retained on the supports.

2,283,818. REFRIGERATING APPARATUS. Gerald P. Marcy, Longmeadow, Mass., assignor to Westinghouse Electric & Mig. Co., East Pittsburgh, Pa., a corporation of Pennsylvania. Application Nov. 1, 1940, Serial No. 363,842. 2 Claims. (Cl. 200—138.)



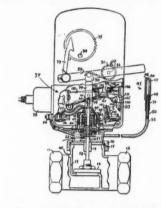
1. In a thermostatically-controlled switch mechanism, the combination of a cupshaped casing, switch elements therein, a bimetallic, snap-acting temperature-responsive element in said casing adapted to open and close said switch elements, a rotatable spindle having a portion within said cup-shaped casing and a second portion projecting therefrom, said spindle being operatively connected with said temperature-responsive element to vary its temperature response in accordance with the rotation of said spindle, and a flexible, moisture-proof membrane secured across the mouth of the cup-shaped casing, and about the spindle to allow rotation thereof, said membrane, spindle, and cup-shaped casing forming a portion of a sealed housing containing the switch elements, the temperature-responsive element, and portions of said spindle.

2,288,843. TEMPERATURE CONTROL SYSTEM. Ralph L. Roland, Bloomington, Ill. Application July 5, 1938, Serial No. 217,330. 4 Claims. (Cl. 257—3.)



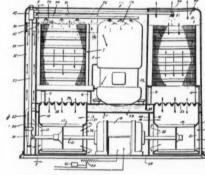
3. In a temperature control system for buildings, dual indoor space thermostats, a bi-metallic outdoor thermostat connected to dual electric circuits separated at the comfortable temperature point, dual resistance elements actuated by said thermostat, one of said elements being actuated in the cold range setting of the space thermostats and the other in the hot range setting to lower the setting of the space thermostats, one of said dual indoor space thermostats, one of said dual indoor space thermostats being a dual solenoid control thermostat for controlling the heating apparatus having one solenoid interconnected with said cold range resistance circuit, the other indoor space thermostat for controlling cooling and air conditioning apparatus interconnected with the hot range resistance circuit, a heater thermostat acuating a resistance element connected in circuit with the other of said dual solenoid elements, and a transformer having a low voltage circuit connecting said control apparatuses through relay switches to control the power circuits whereby the heating and cooling apparatuses are started and stopped to maintain desired interior temperatures by a balanced adjustment of the interconnected control apparatuses.

2,288,890. TEMPERATURE CONTROL SYSTEM. Frederick S. Denison, Minneapolis, Minn., assignor to Minneapolis-Honeywell Regulator Co., Minneapolis, Minn., a corporation of Delaware. Application June 26, 1937, Serial No. 150,575. 19 Glaims. (Cl. 236—9.)



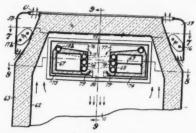
1. In combination, a condition controlling device, an operating member connected to said device, a plurality of independent actuators operatively connected to said member to position the same, each of said actuators comprising a device responsive to a different condition, said member comprising two portions with a breakable connection therebetween, one of said portions being casing, a bellows within said casing and segregating the same into two chambers, a valve carried by the bellows and interposed between the two chambers, said bellows opening said valve upon movement beyond a predetermined movement in either direction, the valve otherwise remaining closed.

2,289,035. AIR CONDITIONING AP-PARATUS. Charles B. Neeson, New Rochelle, N. Y., assignor, by mesne assignments, to Allin B. Crouch, Schenectady, N. Y., as trustee. Application Jan. 25, 1933, Serial No. 653,467. 32 Claims. (Cl. 62—6.)



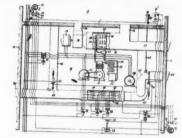
23. Heat exchange apparatus of the character described comprising a refrigerating mechanism inclusive of evaporator and condenser units, means for the circulation of air to be cooled in heat exchange relation with the evaporator unit, means for the circulation of cooling air about the condenser unit, and means for collecting condensate from the evaporator unit and forcibly spraying it into the path of the air circulated about the condenser unit.

2,290,078. REFRIGERATION. Engene L. Schellens, Ridgewood, N. J., and William I. Hamby, Great Neck, N. Y., assignors to Servel, Inc., New York, N. Y., a corporation of Delaware. Original application Aug. 13, 1935, Serial No. 35,924. Divided and this application April 29, 1938, Serial No. 204,948. 4 Claims. (Cl. 62—99.)



1. In a refrigerator, a cooling element comprising a high temperature section and a low temperature section, said low temperature section including freezing compartments and forming a vertical passage for flow of air, thermal insulation around said low temperature section except adjacent said passage, and an outer thermal conductive casing thermally associated with said high temperature section.

2,289,082. AIR CONDITIONING SYSTEM. Alexander R. Stevenson, Jr., Schenectady, N. Y., assignor to General Electric Co., a corporation of New York. Application May 27, 1941, Serial No. 395,411. 16 Claims. (Cl. 257—3.)

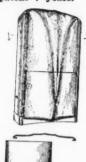


1. Apparatus for conditioning the air within an enclosure including a refrigerating machine comprising a compressor and a condenser and an evaporator for cooling the air in the enclosure, an electric motor for driving said compressor, control apparatus for said motor including a resistor for providing a plurality of motor speeds whereby heat is generated in said resistor at a reduced speed of said motor, and means dependent upon a predetermined condition of the air in the enclosure for actuating said control apparatus to operate said motor at a re-

duced speed and for supplying to the air in the enclosure heat generated in said resistor.

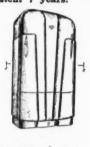
#### DESIGNS

132,881. DESIGN FOR A REFRIGERA-TOR. Louis F. Schmidt, Chicago, Ill., assignor to Stewart-Warner Corp., Chicago, Ill., a corporation of Virginia. Application Aug. 2, 1940, Serial No. 94,133. Term of patent 7 years.



The ornamental design for a refrigerator, substantially as shown.

132,882. DESIGN FOR A REFRIGERA-TOR. Louis F. Schmidt, Chicago, Ill., assignor to Stewart-Warner Corp., Chicago, Ill., a corporation of Virginia. Application Aug. 2, 1940, Serial No. 94,139. Term of patent 7 years.





The ornamental design for a refrigerator, substantially as shown.

# THE BUYER'S GUIDE







# Westinghouse Advertising to Tie In with 'Health for Victory Club' Program

MANSFIELD, Ohio—Because of the growth and acceptance of the Westinghouse "Health for Victory Club"—a nutrition program to speed war production through improved health of workers, the company's merchandising division is using it as a basis for its advertising theme during the last half of the year. A strong schedule has been projected in consumer magazines to inform the public of the contribution to the war effort which this activity is making.

These new advertisements take the form of reports to the nation on the progress of the expansion of this nutrition activity for the housewives of war workers. The first one of the series released is a double page spread with a news treatment in pictures of the nation's first Health for Victory Club at the Mansfield, Ohio plant. This appears in three weeklies: "Saturday Evening Post," "Colliers," and "Life." It carries statements endorsing the program by such government officials as Donald M. Nelson, WPB head; James M. Landis, director of OCD; and Frank G. Boudreau, chairman of Nutrition in Industry of the National Research Council.

Following the same pattern of news treatment with pictures, the second advertisement in the series carries the headline "Health for Victory Crusade Spreading Fast," and a picture "coverage" of a typical war plant "Health for Victory Club" meeting. In this case it's the Hercules Powder Co. at Port Ewen, N. Y. This advertisement will appear in the August issue of "McCalls," Aug. 22 issue of "Collier's," and in the September "American Home." Additional advertisements with a news flavor will be developed and scheduled as the program continues.

Offered in this series is a newly produced 16-page booklet titled "The ABC's of Eating for Health," which covers in condensed form the important elements of the "Health for Victory Club" program. This booklet is available to housewives everywhere with information on how to plan healthful meals, how to protect vitamins in foods when cooking, and additional facts on planning balanced meals.

This Westinghouse "Health for Victory Club," which is the central

# CLASSIFIED ADVERTISING

RATES for "Positions Wanted." 5¢ per word; minimum charge, \$2.50. Three consecutive insertions, 12½¢ per word; minimum charge \$6.25.

RATES for all other classifications, 10¢ per charge. \$5.00 per charge.

per word, minimum charge, \$5.00 per insertion. Three consecutive insertions, 25¢ per word, minimum charge, \$12.50.

ADVERTISEMENTS set in usual classified style. Box addresses count as five words, other addresses by actual word count.

## POSITIONS AVAILABLE

WANTED—Refrigeration Sales Engineer by company with good supply of York and Kelvinator stock in defense area where usual and unusual applications can be found by aggressive man. Good sales record and car required. \$200.00 per month salary plus commission. OIL HEATING DEVICES, INC., Cleveland, Ohio.

REFRIGERATOR SERVICEMAN: Position available in Northern Ohio for commerical man with low pressure experience. Good salary and car allowance. State qualifications in first letter. Include photograph if available. Box 1405, Air Conditioning & Refrigeration News.

WANTED: Refrigeration laboratory assistant interested in low temperature work. Permanent. Box 1406, Air Conditioning & Refrigeration News.

## EQUIPMENT FOR SALE

ONE 7½ by 7½ Twin Vertical York Ammonia Compressor 15 to 20 ton capacity. Large stock of rebuilt Ammonia Compressors, electric motors, circulation pumps, blowers, pipe, and fittings. JOSEPH BEHR & SONS, INC., 1100-1200 Seminary St., Rockford, Ill.

FREEZ-O refrigerant for Frigidaire Meter-Miser units. Perfect replacement for "F114" Send cylinders to THE STANDARD REFRIGERATION CO., McKees Rocks, Pa., for refill. \$1.50 per pound in small lots. \$1.00 in 100-lb. lots. Iso-Butane at \$1.00 per pound in small lots. \$6¢ in 100-lb. lots. Mailing address: Box 194-A, Coraopolis, Pa.

## EQUIPMENT WANTED

WILL PURCHASE immediately used commercial refrigeration blowers, state condition, make, capacity, quantity, price, also other used commercial refrigeration equipment particularly Servel units.

MAJESTIC REFRIGERATOR CORP., 333
West 52nd St., New York, N. Y.

theme for this advertising, was originated by Mrs. Julia Kiene, manager of home economics for the company.

The plan was started as a local nutrition program for the women who cook for "the men behind the men behind the guns" who work in the Westinghouse plant in Mansfield. The purpose of this club is to reduce absenteeism among workers due to sickness caused by dietary deficiencies, and to raise the general health level of the employes. This is accomplished through monthly meetings, and Meal Planning Guides for the members with menus for every meal of the month including lunch box suggestions.

With the endorsement and encouragement of government nutrition leaders, the Merchandising Division "packaged" the program and made it available to all war plants through the utility companies. Today it is one of the major activities of the company's merchandising personnel.

# A-1-a or Repair Rating Required on Warehouse Steel

WASHINGTON, D. C.—The WPB on July 22 acted to permit steel warehouses to continue their necessary function of filling emergency orders for small amounts of steel.

Warehouse stocks had been depleted because warehouses have been required to sell on ratings as low as A-10 and have been able to replenish supplies only on top ratings.

To correct that condition, the Director General of Operations ordered that after Aug. 1 warehouses shall not sell on ratings lower than A-1-a except for maintenance and repair, with some specific exceptions

In addition, the new order, Amendment No. 6 to M-21-b, provides that warehouses must operate under all other delivery restrictions applicable to steel producers.

Maintenance and repair parts may be delivered below A-1-a ratings, provided that deliveries in any calendar quarter do not exceed these percentages of the total quarter quota of a warehouse for such products: stainless steel products, 3%; tool steel products, 3%; other alloys, 3%; all other steel or iron products, 5%.

Nails, bale ties, small pipe, fence wire and posts, steel roofing, and similar products may continue to be delivered on lower ratings or unrated orders.

# Minneapolis-Honeywell Sponsor of New Kind Of Radio Program

NEW YORK CITY—Minneapolis-Honeywell Regulator Co. has signed a contract to sponsor the "Alias John Freedom" radio program under the teamed sponsorship plan of the Blue Network.

The first client of the Blue to sign up under this unprecedented wartime arrangement, Minneapolis-Honeywell will take over the program beginning Aug. 3. Teamed sponsorship gives four advertisers the opportunity to sponsor one program, with each one the featured sponsor once every fourth week, and all four "mentioned" every week.

For the present with Minneapolis-Honeywell as the sponsor once every fourth week, the stations will carry the three intervening broadcasts as sustaining programs. The program will be aired on the complete Blue Network of 127 stations, a requirement for all teamed sponsors. Formerly aired on Sunday afternoons, "Alias John Freedom" has shifted to Monday night 10:15 to 10:45 p.m., EWT, and will remain in that spot under Minneapolis-Honeywell sponsorship. Addison Lewis & Associates, Minneapolis, is the agency.

One of the first commercial radio advertisers, Minneapolis-Honeywell has considerably expanded its 1942 advertising budget.

# Frozen Foods Consumption Stepup Sought To Gain Priority on Cabinet

(Concluded from Page 1, Column 3) attention of the consuming public. Warning of a probable further curtailment of tin for canned foods, the WPB official who issued the statement declared:

"It becomes more evident every day that present methods of food conservation, such as frozen foods, must be expanded in every way possible. Your proposal of a National Frosted Foods Week next October is one of the best means of bringing to the attention of both retailers and consumers of the country the importance of this vital conservation method of food preservation. As a large share of the canned foods produced next year will be set aside for our Armed Forces, the consuming public will be eating more and more of frosted foods, and your educational and selling program in cooperation with wholesalers and retailers of these products will be of great assistance in bringing these facts before them."

Declaring that the cooperation received from various Washington agencies and officials gives practical demonstration of the fact that the government is interested in making available to consumers products which are, if possible, better than those in scarce supply, Mr. Winter declared: "In this instance the foods will not be presented to housewives as substitutes, but rather as highly nutritive farm-fresh perish-

ables which fortunately do not require tin and other vital war materials to process and package."

Explaining that the industry has effected substantial economies in production and distribution in recent years, resulting in price reductions which have brought frosted foods within the price reach of millions of families of moderate income, the industry leader said that consumers will be told of these economies as part of the program to demonstrate that, far from being "luxury foods," quick-frozen perishables are really most economical considering that all waste attendant upon their use is eliminated at the producing source.

# Cabinet Financing Has Widened Distribution

CHICAGO—Frozen foods are on the way to becoming one of the outstanding "war babies" of the current world conflict, if present trends continue, declares a recent article in "Advertising Age."

Progress in the field of domestic distribution of quck-frozen foods is cited from the National Survey on Nutritional Information made for General Foods Corp.

The survey reported that 13.8% of the families in a nationwide sample were regular users of quick-

frozen vegetables, while 10.8% served quick-frozen fruits.

In upper income brackets, 22.2% of the families queried used quick-frozen vegetables and 17.6% quick-frozen fruits, compared with 8.4% and 6.5% respectively for the lower income brackets.

At the present time close to 30,000 retail stores are equipped with refrigerated display cases for quick-frozen foods.

"Current sales records promise to be eclipsed for the near future," says "Advertising Age," "for frosted foods require no critical packaging materials.

"To offset curtailed production of canned foods, the WPB has begun to release retail display cases already completed, so that frosted food packers can step up their distribution, especially in defense areas.

"Altogether 140 companies are now packing and distributing quick-frozen foods, but only one brand, Birdseye, packed by General Foods' subsidiary, Frosted Foods Sales Corp., is nationally advertised, having achieved national distribution city-by-city early in 1940.

"With a virtual 'green light' for continued expansion from the government, Birdseye will boost its national advertising in magazines nearly 25% during the coming year, approaching the \$500,000 figure for the first time in its 12-year career.

"The tremendous capital investment required for plant equipment, and especially for retail display cases, proved a major hurdle to distribution in the early '30,'s, but has largely been licked by lower manufacturing costs and combined rental purchase plans."

